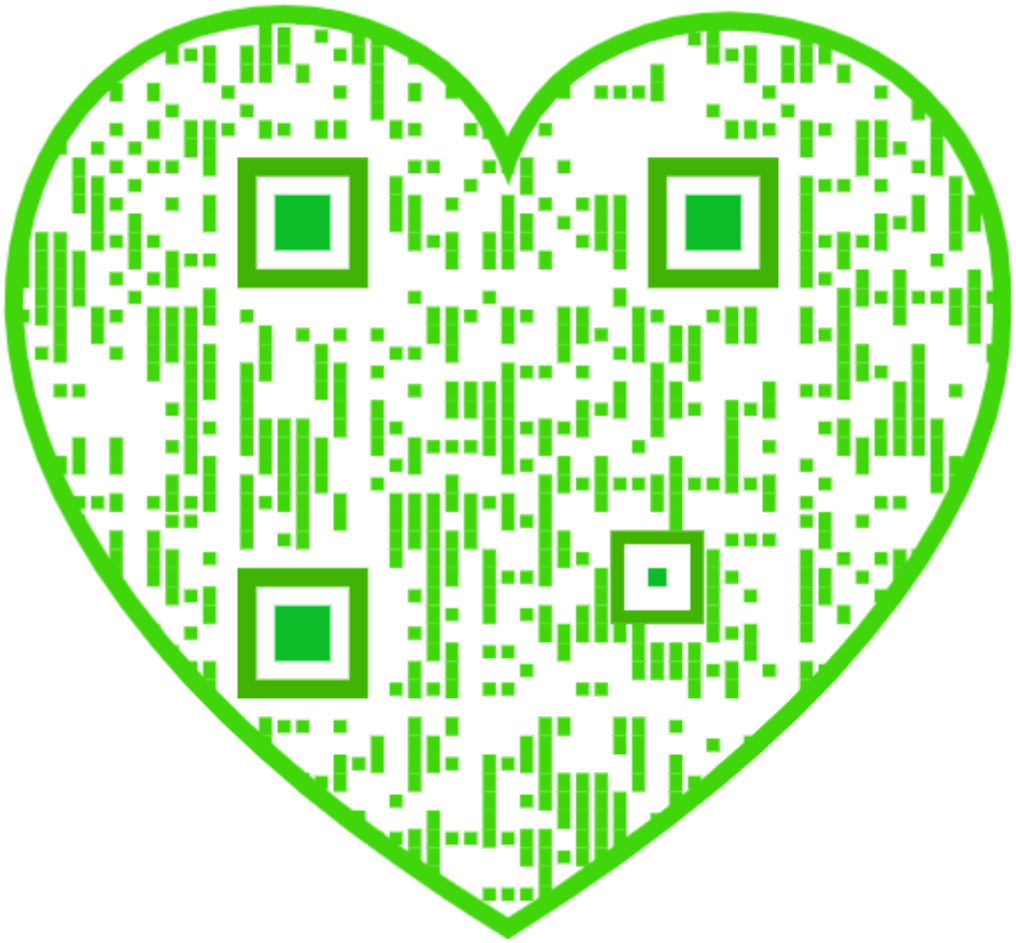

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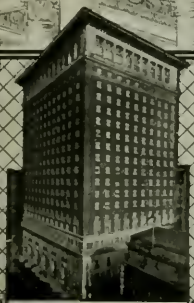

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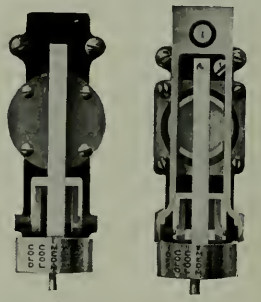

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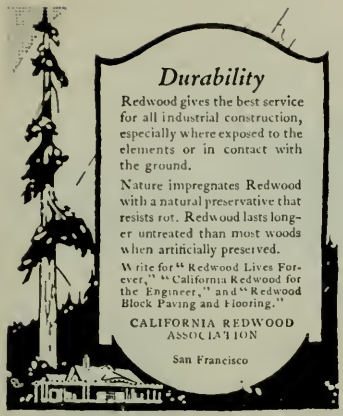

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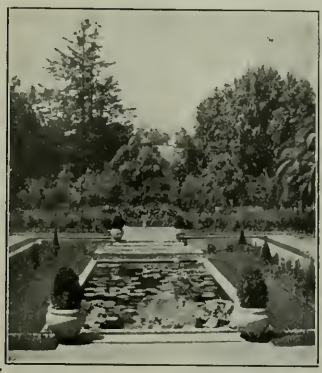

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Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland & Co., Inc., Boston, Mass. Hambly & Sons, agents for San Francisco and Los Angeles.
Mauerene Likwid Sement, sold by the Imperial Company, Monadnock Bldg., San Francisco.
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Paraffine Paint Co., 34 First St., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.

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Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS

Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.

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Haslett Warehouse Co., 310 California St., San Francisco.

COLD STORAGE PLANTS

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Vulcan Iron Works, San Francisco.
H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

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Barrett & Hilp, Sharon Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.

CONCRETE HARDNER

Master Builders Method, represented in San Francisco by C. Roman, Sharon Bldg.
Goffette Sales Association, 276 Monadnock Bldg., San Francisco.

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Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.

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Pacific Coast Steel Company, Rialto Bldg., San Francisco.

Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.

Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., Underwood Bldg., San Francisco.

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Barrett & Hilp, Sharon Bldg., San Francisco.
Carnahan & Mulford, 45 Kearny St., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Houghton Construction Co., Flatiron Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 725 Chronicle Bldg., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
L. G. Bergren & Son, Call Bldg., San Francisco.
Grace & Bernieri, Claus Spreckels Bldg., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
Harvey A. Klyce, New Call Bldg., San Francisco.
Knowles & Mathewson, Call Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
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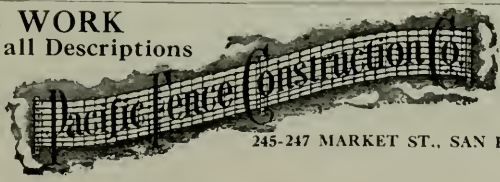

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McCabe Hanger Mfg. Co., New York, N. Y.
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Butte Engineering Co., 683 Howard St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Geo. A. Sittman, 21 Beale St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
J. W. Burtchaell, 357 Ellis St., San Francisco.
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Pacific Fence Construction Co., 245 Market St., San Francisco.

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Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

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Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.

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California Corrugated Culvert Co., West Berkeley, Cal.

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Miller-Enwright Co., 907 Front St., Sacramento.
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

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California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

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James & Drucker, 450 Hayes St., San Francisco.
J. C. Hurley Co., 509 Sixth St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
Neil H. Dunn, 786 Ellis St., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
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J. L. Mott Iron Works, 553 Mission St., San Francisco.

HOTELS
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Ralston Iron Works, 20th and Indiana Sts., San Francisco.

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Pacific Building Materials Co., Underwood Bldg., San Francisco.
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Great Western Power Company, Stockton St., San Francisco.

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Roberts Mfg. Co., 663 Mission St., San Francisco.
Thos. Day Company, 725 Mission St., San Francisco.
J. W. Burtchaell, 357 Ellis St., San Francisco.

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Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

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D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
Paraffine Companies, factory in Oakland; office, First St., San Francisco.

LUMBER
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
California Redwood Association, 216 Pine St., San Francisco.

MAIL CHUTES
Cutler Mail Chute Co., Rochester, N. Y. (See adv. on page 30 for Coast representatives.)
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
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American Art Metal Works, 13 Grace St., San Francisco.
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Fair Manufacturing Company, 617 Bryant St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, 20th and Indiana Sts., San Francisco.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Sartorius Company, Inc., 15th and Utah Sts., San Francisco.
West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PACKING

Plant, Rubber & Asbestos Works, San Francisco.

PAINT FOR CEMENT

Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

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Paraffine Paint Co., 34 First St., San Francisco.
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The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.

The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
Magner Bros., 414-424 Ninth St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

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C. C. Morehouse, Crocker Bldg., San Francisco.
MacGruer & Co., 180 Jessie St., San Francisco.

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A. Lettich, 365 Fell St., San Francisco.
Carl Doell, Twenty-second St., Oakland.
Neil H. Dunn, 786 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.

California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
Improved Sanitary Fixture Co., 632 Metropolitan Bldg., Los Angeles.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Co., Pacific Coast branch, 635 Mission St., San Francisco.
Miller-Enwright Co., 907 Front St., Sacramento.
Mark-Lally Co., 235 Second St., San Francisco, also Oakland, Fresno, San Jose and Stockton.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Sanitary Mfg. Co., 149 Bluxome St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Neil H. Dunn, 786 Ellis St., San Francisco.

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Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

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Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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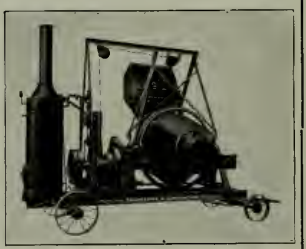

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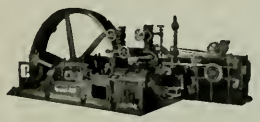

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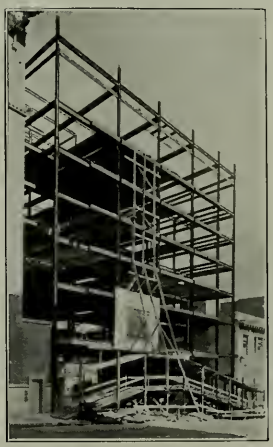

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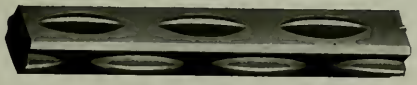

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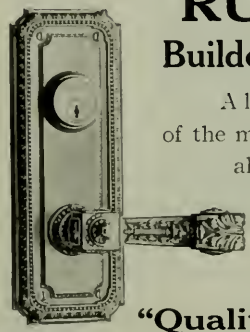

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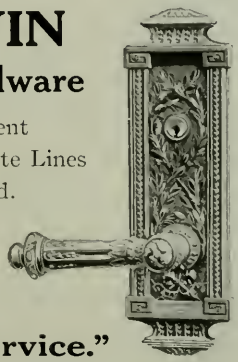

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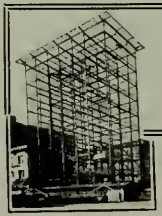

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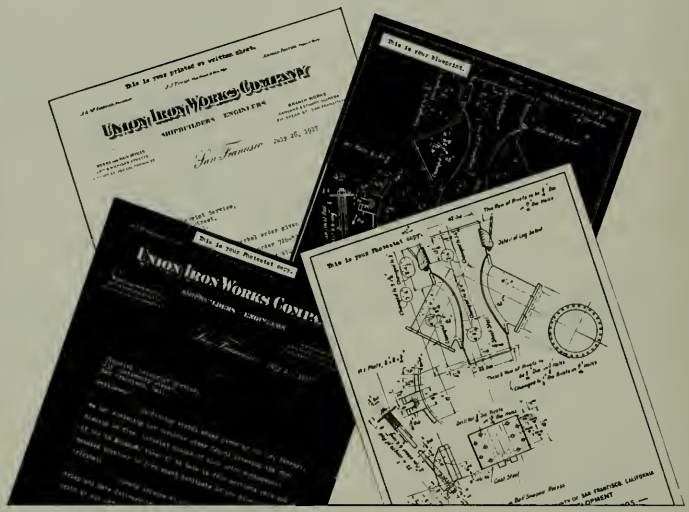

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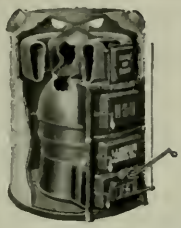

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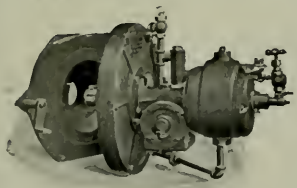

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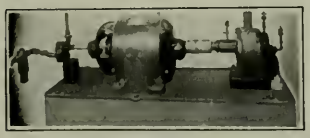

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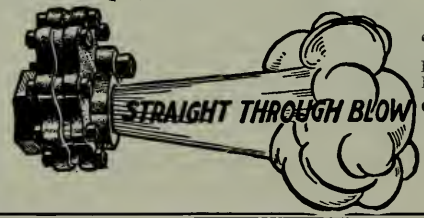

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THE ARCHITECT AND ENGINEER OF CALIFORNIA

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VICTORIOUS, CHALLENGER, DEFIANCE AND INDEPENDENCE, LAUNCHED AT ALAMEDA WORKS, UNION PLANT, BETHLEHEM SHIPBUILDING CORPORATION, JULY 4, 1918

Frontispiece
The Architect and Engineer
of California
for July 1918

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THE
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JULY, 1918 Vol. LIV. Number 1

Pacific Coast Shipbuilders Lead the Nation

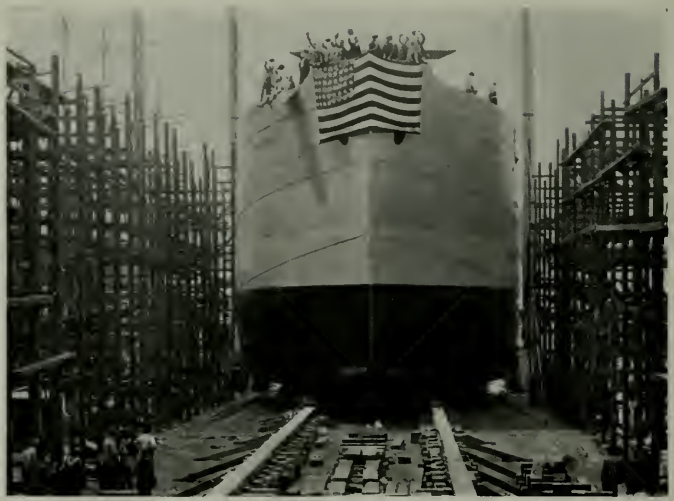
By CHARLES M. SCHWAB,
Director-General of the Emergency Fleet Corporation

SOME of the finest records, perhaps the very finest, of shipbuilding achievement made since we entered this war, have been scored on the Pacific Coast. You are far away from Washington but you need never fear that this splendid service you are performing is overlooked at any time by the Commander-in-Chief of the Army and Navy, our beloved leader, President Wilson.

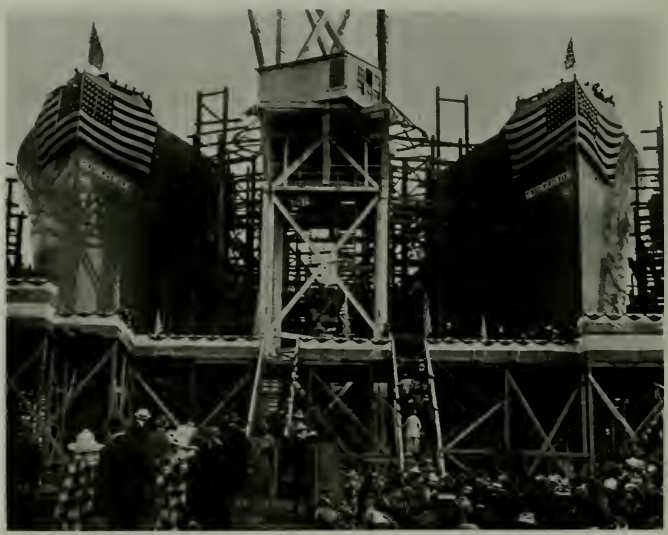
While the returns from the shipyards are not yet in, I venture to predict that the number of ships launched on July 4th last is the greatest record of launchings for a single day in the history of the world. When the truth percolates to the German people they will know that their leaders have deceived them; that Americans have their sleeves rolled up and we have our fighting blood up; that we are going to win this war if it takes the last man, the last ounce of strength, the last resource and the last dollar that this country possesses.

Wars are not won altogether on the battlefield. News of America's accomplishments in the shipyards causes almost as much consternation in Germany as actual defeat. Do not think for one minute that the Prussian generals are unmoved by what we are accomplishing. They know that we launched a 5500-ton ship in 27 days from the time the keel was laid over in Camden, N. J. That was a tremendous accomplishment never before approached in any country and it was a blow in the face of Prussian confidence. Our enemy knows, too, that it is the workmen over here who are making these things possible; that the men in the shipyards are working day and night, determined, untiring and enthusiastic; that they are backing up the boys in the trenches. The Kaiser knows that with the united backing of American workmen, American armies can never be beaten. The credit for winning this war will be shared equally by the workmen of America and the fighters of America.

It was out here in the West that speed records were first made in the shipyards. Before the war began it took from six months to a year to build the largest types of steel ships, but the Pacific Coast cut down this time to 90 days



FREIGHTER MAJOR WHEELER,
Launched at Hanlon Shipyards, Oakland, July 4.



QUIMBA AND YAQUINA,
Refrigerator type of freighters, launched at Moore shipyards, Oakland, July 4.

and then to 55 days. It is men like Dave Rodgers, at the Skinner & Eddy plant and Joe Tynan at the Union Iron Works,—men who know their jobs and treat their men squarely—on whom the Government relies for the right leadership in this shipbuilding programme.

I had a telegram recently telling me how Burt Myers, a riveter and his gang in the Long Beach Shipbuilding Company's yard, drove 2137 seven-eighths inch flush rivets in a shell in eight hours. That kind of a day's work, made by steady workmen and translated into high averages, puts ships into the water in record-breaking time.

It is the high average, of course, that is the best gauge of shipbuilding temperature. It is the worker who stays on the job even at the cost of pride and personal sacrifice that counts for America and against Germany. The man who forgets his own troubles, who thinks only of his country, is the kind of man who is needed in American shipyards today.

We have a great army of workers building ships for this emergency. There are 300,000 of us, and we are all fighting for America. You men who swing the cranes are in charge of the big guns. You who drive the rivets are operating the machine guns of the shipyard. Every man who does a full day's work is doing his share to win the war. The gangs at work on a ship are holding a trench and when they launch that ship they go over the top. When they lay a new keel they are digging in and making ready for another long defense.

German submarines appeared recently off the Atlantic Coast, trying to crowd us off the ocean highways. That was no new thing for Germany. Prussian officers in German cities crowd civilians off the pavements when they stride through the streets. Americans are not the oppressed tired people the Germans are. Americans know their rights and will fight for them. They won't be crowded off the streets or off the ocean highways. Germany's purpose in sending submarines to American waters was to cow this great nation into inaction and to paralyze our preparations. Germany has failed in her purpose. The loss of a few ships may sting but it only goads us on to harder fighting.

Every time we launch a cargo or troop ship or tanker we add to the certainty that German submarines cannot win this war. Already we have the U-boats on the run and if we keep up the pace we will have them beaten by next year. And when we achieve this victory it will be the shipbuilders who will deserve the credit.

Now what did this German raid on American shipping really amount to? These scavengers of the sea began their activities on May 25 and we continued to hear from them up to June 15. In that time they had sunk 10 American vessels of 26,000 deadweight tons. These were mostly small ships, unarmed and of no great consequence in the winning of the war. In the same period of time, from May 25 to June 15, American shipyards completed and delivered to the United States Shipping Board 30 vessels, ranging from 3500 to 10,500 deadweight, and aggregating 167,000 deadweight tons. Place 30 ships of 167,000 tons against 10 ships of 26,000 tons and you can see how much this terrible submarine raid amounted to.

Now, these figures are correct. They were prepared by the Statistical gentlemen in Philadelphia who have complete and accurate information on the output of American shipyards. It will take more than an occasional submarine raid off our coasts to make the American shipbuilder throw up his hands and cry, "Kamerad!"

Germany's only hope now, if it can be called a hope, is to win this war by great military victories. Germany knows that we are building ships and getting a real army across the Atlantic. The Kaiser is making his supreme effort now in the knowledge that America will soon be started and will stay in the war

FREIGHTER VICTORIOUS,
Launched at Alameda Works, Union Plant, Bethlehem Shipbuilding Corporation, July 4

DESTROYER McKEAN,
Launched at Union Plant, San Francisco, July 4.

until it is won. If we complete our shipbuilding programme they will know over in Germany that not a shred of hope remains. Can we complete it? Can we build these ships in time to keep our bridge to France unbroken? That is a question for our men in the shipyards to answer. America has never lost a war and she is not going to lose this one.

Today we are building ships faster than the submarine can destroy them. Meanwhile, our Navy, under Josephus Daniels, is destroying submarines. The German hordes may make some advances on the Western front, but are we downhearted? No. Our army in France and our shipbuilding army at home are getting into their full stride and we will whip them if it takes everything we have.

We must get the men and the guns and the airships over. More and more men must go over, and more guns and rifles and motor trucks—rails, clothing, and horses.

In 1915 all the shipyards in America turned out 215,602 deadweight tons of shipping. The next year when the demand for ships in foreign countries became so great that every existing yard in America entered into keen competition for foreign contracts, our output jumped to 520,847 tons, or almost double the total for 1915. In 1917 the hot pace continued until we very nearly doubled the output of the previous year, completing a total of 901,223. We thought we were building ships, with almost a million deadweight tons of finished vessels, but I am confident now that if we pull together and every man stays on the job, we will produce more than 3,000,000 deadweight tons in 1918—the greatest output of any nation in the world in a single year.

It is a record of which any industry and any nation may well be proud. Last year I would not have said it was possible to do much more in 1918 than double last year's output because we had done fairly well considering our facilities, when we produced 901,223 tonse in 1917; but I am convinced now that the spirit that actuates the men in the yards, with the enthusiasm that lightens our task and with the determination to win out that is a part of every true American today, we will have more than trebled the output of last year when we get through with 1918.

*
* *

Concrete Freight Car is to Be Tried

The reinforced concrete gondola freight car is the newest invention to be put forth as an aid to winning the war. The first cement car is to be built in Chicago in the yards of the M .E. White Paving Company.

Mr. F. E. Sullivan, secretary of the co-operative League of Building Trades and Industries, stated that the contract had been let for the building of a car for experimental purposes. It is to be completed in sixty days.

The experimental car is to have a capacity of 100,000 pounds, a length of forty feet and a width of nine feet. Its cost will be several hundred dollars less than wooden and steel cars of the gondola type, it is said. It will require only 6,000 pounds of steel in its construction, as against 32,000 pounds for the ordinary steel car.

"We know there are many railroad men who say the concrete car is not practicable," Mr. Sullivan said. "There are others who insist that it is. There was the same argument about the concrete boat. We have competent engineers who say a practicable car can be built. If it can it will mean much, for it will relieve the strain on steel mills and transportation facilities for present car construction materials."

THESE BOATS IN ANSWER TO THE CALL:
MORE SHIPS AND THEN MORE SHIPS

C. M. Schwab — Shipbuilder, Psychologist

By CHARLES A. STARR in The Rudder.

CHARLES M. SCHWAB
Director-General of the Emergency Fleet Corporation

STRANGELY romantic were the early days of Charles M. Schwab, who has been called to direct the construction of the world's greatest fleet. When one discovers that the master shipbuilder narrowly escaped being lost to industry for the stage, one cannot but believe in the verity of the poet's "divinity which shapes our ends".

True, Schwab might have been a great success—might even have attained grand opera, rival of Caruso and Scotti—might even have achieved the salary of a Chaplin, one of the few men, who, with Schwab, has drawn down that much long green for a year's work. But when a nation needed a master mind to put through a program, it was a Schwab and not a Chaplin who was chosen.

There is a little chapter in the life of the shipping director that has been overlooked in the mass of material written about him, and that is the fact that he fell in love with an actress, Mary Russell, and wanted to marry her. She fell in love with the Schwab voice, at least, and was willing—wanted him to forsake the narrowed life of the small Pennsylvania town for fame before the footlights and told him that his voice would be his fortune. Stern paterfamilias ended the romance with the usual tears and protestations of faithfulness on the part of the lovers. I doubt if anyone knows what became of Mary Russell, but the world knows of her one-time sweetheart.

Still, perhaps it was the Schwab voice which won him the favor of Carnegie and hence the portal to success. I believe he would have made success anyway, that he could not have been kept down, but his singing made the start easier. It was this way:

The superintendent of the Edgar Thompson Steel Works was in the habit of reporting in person to Mr. Carnegie weekly and detailing all the workings of the plant. He was ill and things at the plant needed all the attention he could give, so he notified Mr. Carnegie one week that he could not visit him.

"Why don't you send one of your young men to tell me all about the works?" said Carnegie.

Next day Schwab was sent to the steel king. He was ushered into the Carnegie presence and almost immediately was asked if he would not play on the piano and sing.

Schwab's heart sank.

"So I was sent here to entertain him, after all," he said to himself; "and I thought I would have a chance to talk to him about the steel mill."

But he played and he sang, home songs of the day, bits of classical music the Franciscan fathers had taught him, and then Scotch melodies that warmed the heart of Carnegie. Then Schwab suddenly had his chance, for he was asked to talk about the mills. He talked long and earnestly about the works

until Carnegie discovered that the young man knew all there was to be learned about the plant and that he was an exceptional fellow. Carnegie's eye was upon him from that day and the upward climb was steady.

It was no whim of chance, however, that gave Schwab his success. Chance never selects the unprepared—not even the unprepared genius. Brains, plus hard work, are the handmaidens of chance, for in the Schwab vocabulary chance means opportunity, not mere fortuity. He puts it: "To succeed you must be born poor," and doesn't that mean handicap and struggle?

Schwab was born on a farm near Williamsburg, Pa., February 18, 1862. At ten he moved with the family to Loretta, Pa., where he had the benefit of training in the Franciscan Father's school and where he *specialized in engineering*, and where he learned adeptness in music, although he had made his debut as a pianist at five. I mention particularly the technical training, for that and that alone is responsible for the great step from stake-driver in the engineering corps to superintendent of the Edgar Thompson Steel Works, a part of the Carnegie system, in one year. The foundation had been laid for the great life, and that, and not fate, was responsible for the fact that until 1905 Schwab never held a job more than four or five years, because they were forever pushing him on into a better job. It was a wonderful ladder up which he climbed, but it rested upon a solid foundation of worth and not upon favor.

Schwab says that a great part of his success was due to his wife. No, he did not marry the actress, but the daughter of his boarding-house keeper at Bessemer, Emma Dickey. It has been said that she was a school-day sweetheart. That is wrong. He met her as she passed the buckwheats at her mother's table, and when he earned his first promotion they were wed. They have had no children and so have had to depend on one another and Mrs. Schwab has been chief adviser of the steel man. When an offer of millions was made for one of his plants, she promptly decided:

"Of course we will not sell. What would I ever do with all that money, and what would you do, Charley, without your job?"

England came near grabbing Schwab years ago when his ability was first becoming known. An English steel manufacturer offered him more than $50,000 a year. He was getting under $100 a week then. He refused. He said nothing about it, but the incident came to the notice of Mr. Carnegie.

"You must not think of it," he told Schwab.

"I am not thinking about it," was the reply, "because I don't want it."

"What do you want?" asked Mr. Carnegie.

"I want to be a partner in your company."

At the next election Schwab was made one of the board of managers and his desire was fulfilled.

When Schwab took hold of Bethlehem Steel in 1905, it was just after he had, when on a trip abroad, visited the plant at Essen. His declaration in assuming control of the Bethlehem plant, then insignificant as compared with today, was:

"What Krupps is to Germany I shall make Bethlehem to America."

How well he has succeeded need not be recited. He has invented new steel processes, has successfully made armor plate, has made the steel for the big guns of the Navy and coast defense, has developed a standardized ship industry on a greater scale than anything prior to the Government plants which now he directs, and he made good on his prophecy in ten years. Bethlehem far exceeds the Krupp plant, and if the war depended upon a race between Essen and Bethlehem the latter would win by a long way.

How has he done this? Granted ability and favoring circumstances, that does not explain all. It takes other men, thousands of them, to make a great

plant. Perhaps it may best be explained by an incident noted at the launching of the Tuckahoe, the record-breaking ship of the Camden yards. As he stepped forward to speak he drew little Miss Hurley, who had christened the Tuckahoe, to his side, saying:

"I want my sponsor with me. This is a big job and I look for my chief support from the ladies."

Schwab has been more than a driver—if that be the term for getting men to work—more than an organizing force. He has made the men with whom he has dealt happier than they had been before; happier in purse as well. It is said of Bethlehem that "no man willing to work is destitute," with this addition, "everybody is happy," and Cupid has a chance. He is known as a man who is always smiling, as a man who is always generous. His men know him and love him and he is indeed one of them. When he had time he was fond of pitching quoits with some of his old cronies at the works at the lunch hour. Next to music that is—or was—his hobby. He is a power-boat "bug" also, having a fine craft on the Hudson. He had a yacht before the war, but that is another story.

He has never gotten over his love of music. The Bethlehem Steel Band of one hundred has visited New York and other cities; the Bach Choir of Bethlehem is another of his pets—you see he was organist and choir singer in the church at Loretta,—and he is a patron of music in a much larger way. In philanthropy the things known of him are the Industrial School at Homestead and the sanitarium for crippled children on Staten Island, but they are but the beginning.

Believing that labor is the essential factor in life, he also believes that the war has freed labor. He is no socialist or dreamer of labor rule. Labor's freedom is to come in that labor, be it of brain or hands, will constitute the real foundation of aristocracy—the aristocracy of service rather than the aristocracy of riches.

This is the ladder up which the Master Shipbuilder climbed:

February, 1862—Born on a farm near Williamsburg, Pa.

April 1, 1867—Played "Here's a Health to Thee, Mary," on the piano.

February, 1870—His first job—a woodpile, five cents a week. Broke a window throwing snowballs the second day and was fined two-weeks' pay.

May 1, 1872—Moved with parents to Loretta.

February, 1874—Began driving stage between Loretta and Cresson, four miles each way, for 50 cents a week.

February, 1875—Added an express and errand business worth $2 a week.

1876-1880—Earned enough to obtain a smattering of education from the Franciscan friars of Loretta, specializing in engineering.

July 1, 1880—Clerk in grocery store, Braddock, Pa., $3 per week.

September, 1880—Stake-driver Thompson Steel Works, Bessemer, Pa., $4.

1881—Superintendent Edgar Thompson Steel Works.

1882—Made assistant manager.

1887—Superintendent Homestead plant, Carnegie Steel Company, $50 per week and bonus of 50 cents per ton on production in excess of previous year.

1887-1889—Reconstructed the plant and made armor plate.

October, 1889—General Superintendent Edgar Thompson Steel Works, Bessemer.

1892—Again made manager at the Homestead plant.

1896—Elected a member of the Board of Managers.

1897—President Carnegie Steel Company, salary, $1,000,000.

1902—President United States Steel Corporation, resigning in 1904.

1904-5—Built a $10,000,000 residence on Riverside Drive, New York City.

1905—Rehabilitated the Bethlehem Steel plant, since then his chief enterprise, though he has been connected with numerous banks, railroads and other companies.

1916—Turned down $25,000,000 order from English Government at request of President—violation of neutrality.

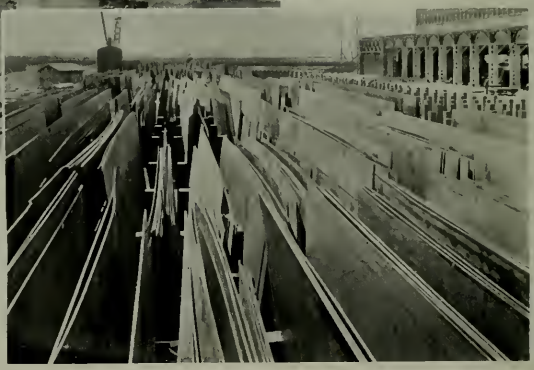
1918—Director-General Emergency Fleet Corporation.

Laying first keel, less than four months after ground was broken for Pacific Coast Shipbuilding Plant, Bay Point.

Process in laying keel.

Concrete bases for shipway. This is one of only three yards in the world so equipped.

Picture below shows plate racks and one of the cranes, also section of plate shop on right.



THE SHIPS' PATTERNS ARE LAID OUT HERE.

The Architect and the Shipbuilding Industry

By M. B. LEVICK

AMERICA'S participation in the war has, of course, brought changes in the field of architecture as well as in many other professions. That these changes mean opportunity as well as limitation has been shown by recent developments in the vicinity of San Francisco. Though not so many structures of ordinary types have been built, there have been compensations. Manufacturing plants have been increasing, and they must be housed. The shipbuilding industry has leaped up in importance, in this region upon a scale more than commensurate with the relative importance of San Francisco to the rest of the country. New yards have been built, old ones enlarged. And while such work has usually been considered rather more an engineering than an architectural problem, the architect has risen to the occasion.

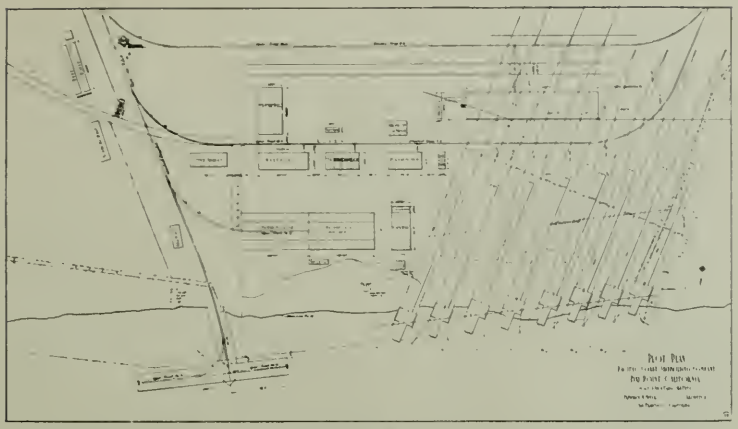
The construction of the big plant of the Pacific Coast Shipbuilding Company, thirty-five miles or so east of San Francisco, is a case remarkably pat to a discussion of the new opportunities for the architect.

This great establishment was designed by Mr. Frederick H. Meyer, whose works in San Francisco are well known, and so rapid was the construction under his direction that in less than four months after the breaking of ground he turned passer boy for the time being, to assist in the formal ceremonies at the laying of the first keel. It is believed that the construction of an establishment of this size in such a short time sets a time record for works of the kind. Much technical attention has been drawn to the job in shipbuilding circles, and the Emergency Fleet Corporation, in its official publication, the Emergency Fleet News, gave prominence to its illustrated account of the first keel laying.

The rapidity with which the plant was put up and got in running order is the more remarkable in that the site of 233 acres is ten times the area

PLATE SHOP, PACIFIC COAST SHIPBUILDING COMPANY, BAY POINT
Frederick H. Meyer, Architect

INTERIOR MACHINE SHOP, PACIFIC COAST SHIPBUILDING COMPANY, BAY POINT
Frederick H. Meyer, Architect



PLOT PLAN, PACIFIC COAST SHIPBUILDING PLANT, BAY POINT, CALIFORNIA
Frederick H. Meyer, Architect

heretofore considered large for a shipbuilding plant. It is said to be the largest site on the Pacific Coast and one of the largest in the country.

Some notable feats were accomplished in the erection of the main buildings, of which there are a dozen.

Most important of the structures in such a plant is the plate shed. That at the Pacific Coast Shipbuilding Company's yard is 400 feet long and 80 wide. The whole work of its construction, including foundation work, took but forty working days, and the actual erection was finished in eighteen. The plate shop, moreover, was started as soon as could be and the work progressed while vast quantities of material were arriving and the job of straightening out such an extensive work was being tackled amid initial difficulties.

The machine shop is a large building, 120 feet wide. Its erection took only twelve days, and the whole job, including foundations, but twenty-three.

Nor were these two isolated examples of speed. The power house, for instance, was built in six days—a building fifty by a hundred feet. The blacksmith shop, of the same size, took only twelve days.

And so it went throughout the yard, not only in the construction of the buildings but in the grading, dredging, the installation of machinery, the building of the ways. January 6th they started work; May 1st they had put down the first keel, and machinery had been tested and men were at work before that, while six weeks later three keels were in place, another was almost ready, and the plant was humming at the task of its first contract—the building of ten 9400-ton deadweight cargo steamers for the government.

The fourth keel was laid July 6th, just six months from the breaking of ground. The spectators included Charles Piez, vice-president, and other officers of the Emergency Fleet Corporation.

There are some novel features to this plant. One of them is the use of concrete in the construction of the bases of the building ways. There are said to be only two other yards in the world in which this method has been used—or were when the Pacific Coast Shipbuilding Company started work

on the plant. One of the other yards is in Scotland and the third is the Hog Island plant, where a fifth of the ways were designed with concrete pillars.

Of the seven ways designed, four were picked out for immediate completion.

Many tasks less obvious than ways or buildings in the results were fulfilled in the building of the plant. Aside from the overcoming of difficulties such as are met with in every work of the scope of this, not a few of the details furnished good sized jobs in themselves.

The fire protection system was outlined upon a generous scale. Of pipe fully a mile was required to serve the thirty-five hydrants scattered about the big area. The system draws upon the bay—Suisun Bay—for its supply, a screened service pipe filling a 50,000 gallon settling tank of concrete, at tide level; above this there is a 50,000 gallon tank of a height giving sufficient pressure.

The aerial tramway system has attracted attention also. This comprises a series of 110 foot sticks strung with 1¾-inch cables, two running over each slip. In this the trolley systems familiar from use in quarries and mines have been adapted to the needs of shipbuilding, the Bay Point aerials being considered an admirable example of the latest application.

The principal features are upstanding masts at the head and the water side of the shipways. This gives a complete trolley service over the ways, with the hoists operating separately or in unison, the result being a wide range of handling capacity. A sag of 22 feet is allowed in the center of the cableway. There are two hoists or hooks to a ship, and in handling heavy materials both hooks can be joined, the capacity thus being double. It is also possible to swing the material into any part of the ship under construction, beyond the line of the perpendicular of the aerial.

The anchorages are as massive as the needs would seem to indicate. There is a single anchorage for both aerials of each slip at the head and at the water side. This is a concrete block nineteen feet square and nine feet deep, buried in the earth. In this are embedded solid two-inch rods to which the cables are fastened, provision being made for taking up the stretch in the line at the land end. The iron work alone of one of these anchorages weighs from three to four tons.

The outboard anchorages are formed of a cluster of a dozen piles driven to refusal and blocked solidly, brace piled and bolted together. The wire cables are wrapped securely around this dolphin.

The electric hoisting engines are at the foot of the inshore masts. The cables run vertically to the heads of the inshore masts through sheaves.

Material is picked up from in front of the plate shop where the fitting out space is situated, and is carried to the workers in the slips without rehandling.

Indeed, the entire yard has been laid out to eliminate unnecessary movements, and as a result of scientific distribution of buildings and apparatus each piece of material going into a steamer need be handled but once, against several handlings for yards with comparatively less area.

Amplitude of space for future requirements is regarded as a big asset for an establishment of this kind.

The yard has a frontage of more than half a mile—2800 feet—on the upper Suisun Bay. The situation has many advantages given by nature and by man, including proximity to the delta of the Sacramento and the San Joaquin rivers, whose fresh water assures long life to submerged timbers, being inimical to the toredo and the barnacle.

The growth, within a few years, of a great industrial region in this part of the bay district indicates the possibilities of the yard's surroundings.

Topography, soil, climate—all such factors as these are favorable, and under such heads as transportation and fuel as much and more can be said. Three railroad main lines—those of the Southern Pacific, the Santa Fe, and the Oakland, Antioch and Eastern—traverse the company's property, being linked by a system of spur tracks comprising more than two miles. The railroads are paralleled by the power lines of the Pacific Gas and Electric and the Great Western Power Companies. The oil fields are tapped by the near-by pipe lines of the Associated, the Standard, and the Shell Oil companies.

The site has an ample expanse of water before it for launchings, and there is deep water—twenty-seven feet—along the frontage.

This location, removed from the area in which land adaptable to shipbuilding is held at the prices of city water frontage, is exceptionally adapted to the needs of the yard.

The achievement of those first four months was remarkable, and what has been accomplished since scarcely less so. The yard has been kept humming under the supervision of one of the pioneer shipbuilders of the San Francisco region, Mr. John T. Scott, for many years connected with the Union Iron Works and the Moore and Scott (now the Moore) Iron Works. Mr. Henry T. Scott, who is also a figure of national stature in the shipbuilding world, is likewise connected with the new company.

The Pacific Coast Shipbuilding Company is, of course, turning first to the contract for the ten big steamers wanted by the government, but during the period of the yard's construction, brief as it was, proposals for the construction of sixty steamers were received.

During the building of the plant, field headquarters were established on the site by the contractor, the Lindgren Company, whose work was directed from there in the same manner as in the building of Camp Fremont. Before the force of several hundred carpenters and other mechanics had begun to be let out, with the completion of the task in sight, the shipbuilding workers were getting on the job and in some departments work was under way. It is expected that when the yard is in full swing, from 3000 to 4000 men will be employed.

* * *

Marine Architecture

By B. J. S. CAHILL, Architect

STUDENTS from this country applying for admission to the Ecole des Beaux Arts have often been surprised when questioned as to the land of their origin. They answer glibly enough and without hesitation, "America," and then comes the little jolt when further questioned, "Amerique du Nord, ou Amerique du Sud?"

Architects are prone to fall into a similar error in assuming that the name of their chosen profession covers construction on land and on land alone. But every dictionary and cyclopaedia makes it very plain that there is a marine architecture and a naval architecture as well as marine architects and naval architects.

And, indeed, the two great branches of the art meet and overlap each other in many ways we are apt to overlook. The first boat mentioned in the Bible combined both types in one structure. Noah's ark being the first specimen of what was really an amphibious architecture—we might call this "arkitecture." It floated on the flood or rested on Mt. Ararat—a Mespot river boat and a mountain resort by turns, just as any ark in Belvedere Cove is a bungalow on the flood or on the mud at the owner's pleasure. And just as these arts had a common origin, so now they seem to be coming together again.

A modern liner is getting more and more a landsman's hotel afloat, with its elevators, bedroom suites and gorgeous salons, designed and decorated in old "period" styles. And also in a sense the modern land building is borrowing from sea usage in its cage construction, in the close economy of space with its built-in furniture and beds—little differing from the bunks of a stateroom.

The two arts tend to borrow from each other where the sea meets the shore. On the waterfront of most sea ports basements must be made watertight as a hull and on scow foundations as we say, or resting on piles—at the same time vessels for inshore use, such as ferry boats, closely approximate buildings in that they are little more than land pavilions reared on scow hulls—and also held by piles when at rest. And just as cottages on the water margin merge imperceptibly into moored or floating bungalows, so does many a floating craft become permanently beached and transformed into a building, so that what was once a hull is now a house—the home of Cap. Peggoty, for example, in David Copperfield, being a good example in fiction and the Ship hotel at Brighton a famous one in fact.

The practical problems of building are similar for land and sea use, the materials used are practically the same. Plans, sections, elevations and details for both systems are drawn to scale and blue printed and in large shipbuilding communities both the draftsmen in the designing room and the workmen on the job can and often do interchange the work at will and as occasion demands.

The principles of construction have their differences and contrasts, but in some localities even these approach each other and overlap.

Thus all the lines in land architecture are, in the main, straight; whereas the lines in marine architecture are all curved. But highly developed architecture on land runs also to curves, just as the latest liners are far more rectilinear than the older and more primitive sea craft. The landsmen's structures as a rule rest on stable foundations, whereas a ship bears on a moving element and must be rigid. A long, narrow pavilion on land does not require rigidity from end to end, except between spans; but a ship must be rigid throughout to stand under sagging strain when the waves lift each end, as in a bridge or to stand over hogging strains when a wave lifts it in the middle as in a cantilever. But in a district such as San Francisco, where the land occasionally takes on wave action we find our architecture veering towards the marine type. On this account our large important buildings are often set on scow foundations or monoliths with tensional steel both top and bottom to retain rigidity under sagging and hogging strains just as in a ship's hull—and this in all directions, abaft and athwart, for all diagonal, intermediate and tortional strains in between. The boundary walls of our buildings are tied together and braced from end to end, more after the fashion of ships and bridges than static structures like buildings.

In principle all structures, both sea and land, are built on a rigid skeleton of wood or metal covered with a protective outer shell. Thus studs, joists and ridgepole are repeated in ribs, stringers and keel. A section through a gabled frame house, if turned upside down, gives the same diagram as the cross-section of a hull if the lines are slightly curved—the bilge and garboard strake of the former becoming the attic and roof of the latter. The members and sections of a steel frame for a land or water structure are nearly identical. Channels, tees, angles, H columns and Z bars riveted together on plates in both cases. The main difference perhaps lies in the greater use of bulb sections for ships and I beams for buildings, and of course steel plates in place of masonry for strakes and sheathing.

In the matter of covering, skins, cloth, bark and wattle are used alike on canoes and huts of primitive peoples. In civilized communities the sides of both are boarded and we use shiplap indiscriminately for both hulls and houses.

If, as we remember that structurally a ship is an inverted house—why then again we shall see that both roof and hull of wooden ships are sheathed with sheet metal, as the shining cottage roofs of old Quebec, or cased with copper as windjammer merchantmen used to be. Tar and paint are equally indispensable to both.

Brick and stone, and terra cotta have of course no place in marine architecture, none the less the Roman Emperor Caligula, I believe, built for himself a sumptuous albeit stationary ship of marble and stone, bronze and mosaic, the remains of which can be seen to this day on the bottom of Lake Nemi, 18 miles from Rome, the water of this volcanic lake having risen in recent times.

If steel ribs for ships antedate the steel skeleton for buildings, the reverse holds in the use of ferro concrete. Here the landsman got ahead, but the marine architect, having now definitely adopted concrete, will soon catch up with the former. Concrete lends itself to the curvilinear forms of marine architecture better than oak or iron, especially forms of compound or spheroid curvature, which cannot be "developed," as mathematicians say.

Once a form is constructed in movable sections, ship hull after ship hull can be poured in it without end, and if sufficient mixers are used with large dumps of rock and gravel handy, this can be accomplished under pneumatic pressure in fifty hours, perhaps half that time. Allowing ten days for setting and four days for placing mesh and reinforcing already fabricated and ready to set in sections—two 5,000-ton bottoms could be launched in one month from one cradle. There is nothing visionary in this programme for hulls of simple design.

But concrete also lends itself admirably to the cellular system by using sheet metal forms for air pockets, so that double shell walls of the bilge might be carried up the sides of larger vessels, and where armored protection was needed to deaden and localize torpedo or mine explosions, the filling might be done by using solid blocks of pumice held to shape by gypsum, in place of voids surrounded by sheet iron. Packed pumice is lighter than water and yet it is very tough to resist impact and is abundant in California. Here there is room for much invention and experiment. If soft rubber will offer five times the resistance to sand blast that steel will, it might yet prove that a porous or yielding material such as pumice might have unimagined powers of resistance, and if divided into small areas with solid web wall between, the damage might be localized sufficiently to keep ships afloat long enough to make the nearest port.

The practical application of these random comparisons of sea and land architecture lies in the fact that the same kind of thinking used in planning land buildings can be modified and diverted to the planning of sea structures or ships, that many men trained for plain architecture could tackle the problems of marine architecture. The structural problems are somewhat more complicated, and the details more difficult to draw. The subdivisions of decks and hold for machinery, merchandise, and passengers call for identical ingenuity demanded of the ordinary architect. Plumbing, ventilating and wiring problems are the same. We speak here of ordinary freight and passenger boats made to a standard design for war time uses. But the sudden intensive and extensive growth of shipbuilding in the port cities of the United States is not merely a temporary growth to make up for "U" boat devastations. The industry of ship building to sustain a large and growing mercantile marine is sure to continue after the war is over. The isolation and self-sufficiency of the United States will henceforth be a thing of the past. We shall need interchange with all nations and all nations will need interchange with us.

Many a draftsman now planning houses will soon find himself planning hulls; and this is more likely to happen now than in the future when many

young men who otherwise would study to become architects, will start out to become marine architects instead. And all these arguments of course apply with more force still to structural, mechanical and electrical engineers, whose work is now projected for land uses, but whose work will more and more be devoted to marine and naval uses.

San Francisco Bay in particular is destined to be the Belfast of the Pacific—our Clyde will be on the Atlantic. And this for three reasons—our climate, which allows year-round working; our habit of earthquake construction, which already has partially trained us for ship design, and the post bellum development of the Panama route from the Atlantic to the Pacific.

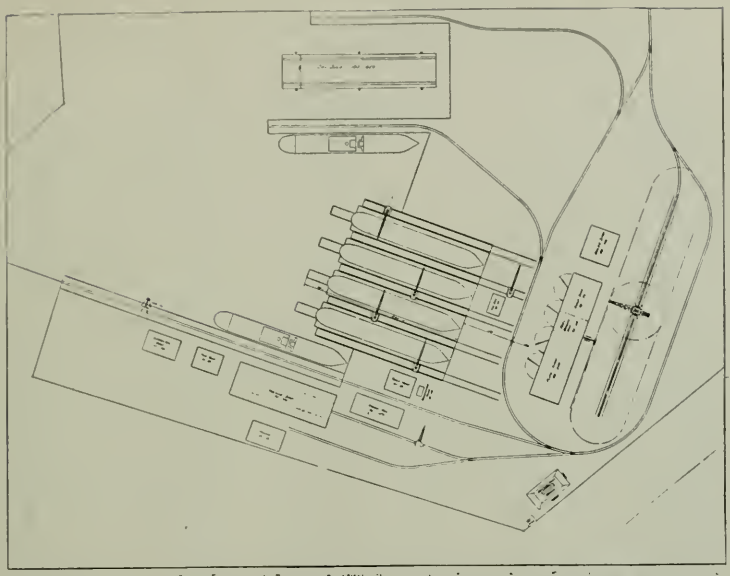
This is bound to grow by leaps and bounds. By reason of the usual absurd misrepresentation of Mercator's Chart (made in Germany, by the way) very few of us realize that San Francisco Bay is on the Panama route to the Orient. Indeed, not one landsman in a thousand, on looking at Mercator's world map, could lay out the short route between Panama and Yokohama for an airship. He would draw a straight line west by north, passing through the Hawaiian group, little dreaming that the real short route would not start out into the Pacific at all, but would go across the Gulf of Mexico through Yucatan to Galveston, thence northwest several hundred miles WEST of San Francisco to the neighborhood south of Puget Sound, where it would, for the first time, enter the Pacific ocean, skirt the Aleutian Islands and land in Yokohama from the NORTHEAST.

A glance at the silhouette world map here printed shows this great circle short route as a straight line, and it will be seen at a glance that all ships going from Panama to Japan must necessarily pass along the coast as far as San Francisco to make the shortest route and not pass a couple of thousand miles away as we would gather from Mercator's chart.

GROUND PLAN OF THE WORLD IN A NEW PROJECTION INVENTED BY B. J. S. CAHILL, ARCHITECT

Note the great circle route from Panama to Yokohama shown as a straight line.

And may I be permitted to point out that this plan of the world, the first and only one to show great circle routes reduced to straight lines, without the fantastic distortions of the gnomonic chart, was invented by an architect and drawn in Alameda, a town quite possibly destined to be the nucleus of the greatest shipbuilding center in America, and perhaps the world.



GENERAL LAY-OUT OF THE PLANT OF THE UNION CONSTRUCTION COMPANY, OAKLAND WATER FRONT BETWEEN THE KEY ROUTE AND OAKLAND MOLES

Shipbuilding Plant for Key Route Basin

CONSTRUCTION has started in earnest on the new ship building plant of the Union Construction Company in the Key Route basin, Oakland. Plans for the big plate shop were prepared by Engineer Henningson and the steel is being supplied by the Pacific Coast Steel Company. The plate shop will be located across the head of the building ways with 250 feet of working space between. It will be 380 feet long by 90 feet in width, with the mould loft occupying the second floor. The monorail system of handling material has been adopted for this building, the hoists being electrically driven as will also be all the machine tools in the plant.

The plate and shape storage space is located on the shore side of the plate shop and will be served by a traveling crane with an eighty-foot boom, which will cover an area of 750 by 160 feet.

The power house will contain two Ingersoll-Rand compressors with a combined capacity of 5,000 cubic feet of free air per minute and also the pumps for a complete high pressure fire system.

A machine shop, 300 by 100 feet in size, will be located as indicated on the accompanying plan.

The power and transformer houses have been designed by the company's own drafting department, and the office building has been designed by Mr. Lloyd Rally, architect, with offices in the Atlas building.

Upon completion of its plant the Union Company will start building ten 9,400-ton deadweight freighters, delivery of which is to be made to the government in the spring of 1919.

Fifty-three Wood Ships Launched July 4th

[26 on the Pacific Coast]

Contractor	Location	Name	D. W. T.
Portland Ship Coiling Co.	Portland, Me.	Okesa	3,500
Kelly-Spear Co.	Bath, Me.	Columbine	3,500
Cumberland S. B. Co.	So. Portland, Me.	Cumberland	3,500
" " "	" " "	Falmouth	3,500
L. H. Shattuck, Inc.	Portsmouth, N. H.	Croxton	3,500
" " "	" "	Cruso	3,500
" " "	" "	Chadwick	3,500
Foundation Company	Newark, N. J.	Congaree	3,500
" "	" "	Coweta	3,500
Traylor S. B. Corp.	Cornwells Heights, Pa.	Alapaha	3,500
" " "	" " "	Buhisan	3,500
Johnson Shipyards Corp.	Mariners Harbor, N. Y.	Aowa	3,500
Groton Iron Works	Noank, Conn.	Dalsto	3,500
Tampa Dock Company	Tampa, Fla.	Agria	3,500
Jahncke S. B. Co., Inc.	Madisonville, La.	Bayou Teche	3,500
Dierks Blodgett S. B. Co.	Pascagoula, Miss.	Belair	3,500
Alabama D. D. & S. B. Co.	Mobile, Ala.	Banago	3,500
Hodge S. B. Co., Inc.	Moss Point, Miss.	Alpaco	3,500
Dantzler S. B. & D. D. Co.	" " "	Boone	3,500
Mobile S. B. Co.	Mobile, Ala.	Balmo	3,500
Southern D. D. & S. B. Co.	Orange, Tex.	Arenas	3,500
National S. B. Co.	" "	Beechland	4,700
Universal S. B. Co.	Houston Ship Canal, Tex.	Banicaa	3,500
McBride & Law	Beaumont, Tex.	Quapaw	3,500
Union Bridge & Constr. Co.	Morgan City, La.	Amoron	3,500
Lone Star S. B. Co.	Beaumont, Tex.	Arado	3,500
Midland Bridge Company	Houston, Tex.	Katonah	3,500
Fulton S. B. Co.	Wilmington, Cal.	Mono	3,500
Allen S. B. Company	Seattle, Wash.	Bosworth	3,500
Grant-Smith-Porter Ship Co.	Aberdeen, Wash.	Wihaha	3,500
" " " " "	" "	Itanca	3,500
Grays Harbor M. S. Corp.	" "	Brompton	4,000
" " " "	" "	Broncho	4,000
Moacham & Babcock	Salmon Bay, Wash.	Daca	3,500
" " "	Seattle, Wash.	Wayucan	3,500
Nilson & Kelez	Seattle, Wash.	Forster	3,500
Pacific-American Fisheries	South Bellingham, Wash.	Blythedale	3,500
Sanderson & Porter	Willapa Harbor, Wash.	Kenosha	3,500
Seaborn Shipyards Co.	Tacoma, Wash.	Chimo	3,500
Sloan Shipyards Corp.	Seattle, Wash.	Sewickly	3,500
Tacoma S. B. Co.	Tacoma, Wash.	Coloma	3,500
" " "	" "	Fassett	3,500
Wright Shipyards	" "	Bourneville	3,500
G. M. Standifer Const. Corp.	Portland, Ore.	Umatilla	3,500
Peninsula S. B. Co.	" "	Braehurn	4,000
Coast S. B. Company	" "	Cabeza	3,500
McEachern Ship Co.	Astoria, Ore.	Benvola	3,500
Grant-Smith-Porter-Ship Co.	St. Johns, Ore.	Necolah	3,500
Sommarstrom S. B. Co.	Columbia City, Ore.	Wanzu	3,500
Wilson S. B. Co.	Astoria, Ore.	Bonifay	3,500
Supple & Ballin	Portland, Ore.	Airlie	4,000
Geo. F. Rodgers & Co.	Astoria, Ore.	Blue Eagle	3,500
St. Helens S. B. Co.	St. Helens, Ore.	Colindo	3,500

	Number	Tonnage
Number of ships launched	53	188,700

Coast Leads in Steel Ship Launching July 4th, 1918

Builder	Location of Yard	Name of Vessel	D. W. T.
Texas S. B. Co.	Bath, Me.	Sagadahoc	9,500
Standard S. B. Co.	Shooters Island	Morristown	7,300
Beth. Harlan Plant	Wilmington, Del.		3,500
Pusey & Jones	" "	War Compass	4,000
Baltimore S. B. & D. D. Co.	Baltimore, Md.	Naiwa	8,800
Tampa S. B. Co.	Tampa, Fla.	Everglades	3,500
Beth. Union Plant	San Francisco, Cal.	Independence	11,800
" " "	" " "	Victorious	11,800
" " "	" " "	Defiance	11,800
Hanlon D. D. Co.	Oakland, Cal.	Major Wheeler	5,500
Beth. Union Plant	Alameda, Cal.	Challinger	12,000
Moore S. B. Co.	Oakland, Cal.	Yamhill	9,400
" " "	" "	Yaquina	9,400
" " "	" "	Guimba	9,400
Los Angeles	Los Angeles, Cal.	West Galeta	8,800
" "	" " "	West Zula	8,800
Western Pipe & S. Co.	So. San Francisco, Cal.	Nuntahala	8,800
Duthie, J. F. & Co.	Seattle, Wash.	Western Star	8,800
W. W. Steel	Portland, Ore.	Western Comet	8,800
Todd	Seattle, Wash.	Puget Sound	7,500
Seattle	" "	Delight	7,500
Skinner & Eddy	" "	West Gambo	8,800
American, Clev.	Cleveland, O.	Lake Gedney	3,550
American, Lorain	Lorain, O.	Lake Garza	3,550
American, Chicago	Chicago, Ill.	Lake Berdan	3,550
American, Wyandotte	Wyandotte, Mich.	Lake Ormoc	3,550
Globe	Superior, Wis.	Lake Borgne	3,500
McDougall-Duluth	Duluth, Minn.	Lake Indian	3,100
Manitowoc	Manitowoc, Wis.	Lake Winthrop	3,400
Great Lakes	Ashtabula	Lake Pleasant	3,300
" "	Ecorse, Mich.	Lake Janet	3,300
" "	" "	Lake Pearl	3,300
Saginaw S. B. Co.	Saginaw, Mich.	Lake Benona	3,500
Cramp S. B. Co.	Philadelphia, Pa.	Santo Teresa	4,986
N. Y. S. B. Co.	Camden, N. J.	Scanlon	8,100
P. & J. Pa. Yard	Gloucester, N. J.	Brandywine	7,000
" " "	" "	Wm. Penn	12,500

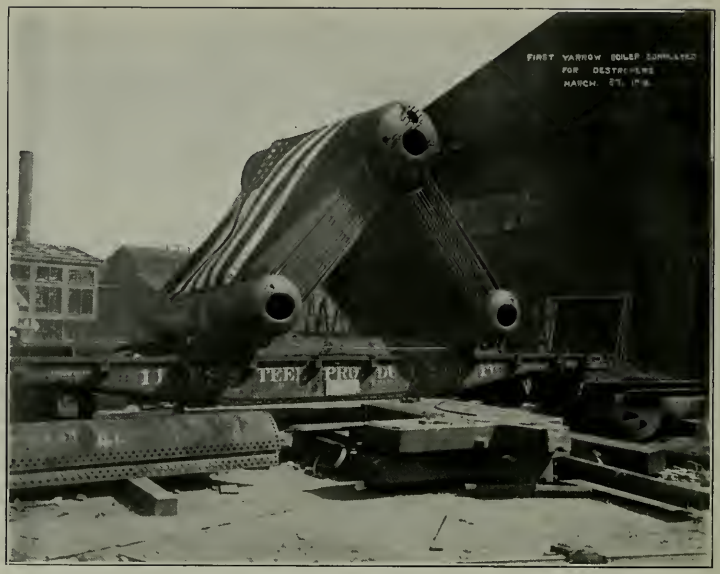
	Number	Tonnage
Total steel ships launched	37	255,686

* * *

Pacific Coast Leads in Riveting Record to Date

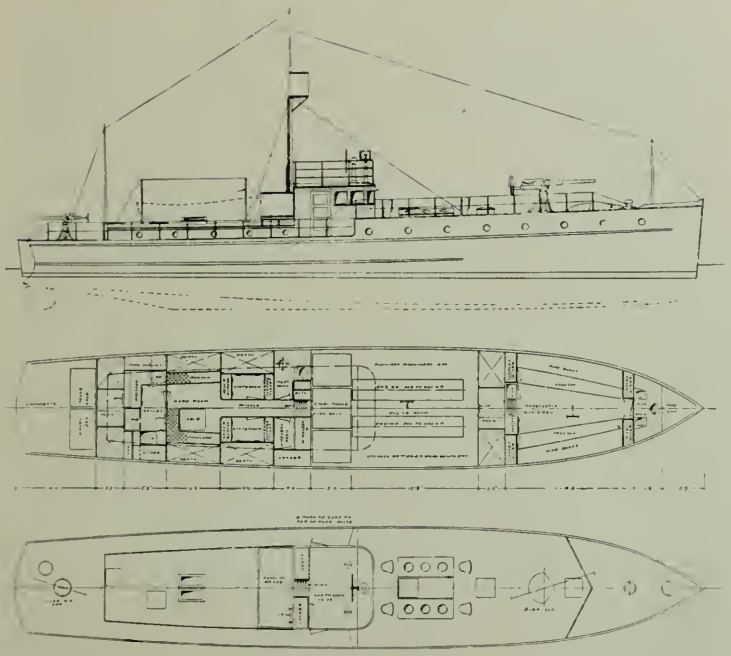
Other parts of the country are following far behind the Pacific Coast in rivet driving per way per week. In the four-week period ending April 22, rivets were being sent home on the Pacific Coast at the rate of 33,000 per ship way. For the four-week period ending May 25, according to charts prepared by the statistical section of the Emergency Fleet Corporation, more than 36,000 rivets per week were driven. This is an increase of something more than 3000.

Among the States, as already indicated in the District returns, Washington and Oregon ways lead the rest of the country; but California runs a close second, with a mark of just slightly more than 36,000. The performance of the Union Iron Works in driving more than 80,000 rivets is largely responsible for the high standing given to California. This company holds the record for the period.



FIRST YARROW BOILER COMPLETED FOR DESTROYERS, MARCH 27, 1918
Courtesy Union Plant publication.

JOSEPH TORRES,
Champion rivet-driver of the world, at Union Plant of the Bethlehem Shipbuilding Corporation, Ltd.



PATROL BOAT DESIGNED BY RALPH E. WINSLOW

An 86-Foot Patrol Boat

THE accompanying plans are of an 86-foot patrol boat, designed by Mr. Ralph E. Winslow, of Quincy, Mass., who was one of the original members of the Volunteer Patrol Squadron. Mr. Winslow has specialized on the patrol type of power boats, being connected with the drafting departments of two of the country's leading designing and boatbuilding companies who have planned and built more of these patrol type of boats than any other company. He was also employed in the designing of the Navy Department's 110-foot submarine chasers.

This boat, says the Rudder, is designed for harbor and coastwise patrol service, and is a large, powerful type of boat with a model capable of being driven at good speed and yet not sacrificing seagoing qualities. The construction should be quite heavy to withstand the rough usage that these boats get and the banging against docks and other boats and pounding in heavy weather.

Her length is 86 feet over all, breadth 15 feet, draught extreme 4 feet; total gasoline capacity 2,800 gallons. Her extreme high speed with two 200-h. p. engines would be about 17 knots; with two 300-h. p. engines about 20 knots, and with two 400-h. p. engines about 22 knots. The displacement loaded would

be about 33 tons. Her cruising radius at full speed would be about as follows: with two 200-h. p. engines, 700 miles; two 300-h. p. engines, 650 miles; two 400-h. p. engines, 575 miles. At reduced speed she would have a cruising radius of about 2,800 miles with two 200-h. p. engines, 2,400 miles with two 300-h. p. engines, and about 1,900 miles with two 400-h. p. engines.

The boat could be built of either steel or wood. Preferably of steel, although somewhat cheaper and quicker of wood. But a steel boat would be safer from fire and splinters.

The vessel is divided into seven watertight compartments. Commencing forward is the forepeak, aft of which is a watertight collision bulkhead. Aft of this is the forecastle with accommodations for ten or twelve men, with toilet room, four clothes lockers, and a small crew's pantry. Aft of this are two water and fire-tight bulkheads which enclose the ammunition room for the forward gun. Next comes the engine room and amidships tank room, which contain the main propelling engines, the electric generator, storage batteries, pumps, work-bench, oil tanks, and other auxiliaries for a complete engine room.

There is another watertight bulkhead aft of the engine room, aft of which are the officers' quarters, consisting of a wireless room convenient to the control room or pilothouse, a toilet with shower bath, two staterooms for the executive officers, a combination wardroom and dining room with two built-in berths for the chief petty officers, as well as transoms, and in the after part of these quarters is a large and efficiently arranged galley with coal stove, refrigerator, sink, storage lockers, etc.

Next is another ammunition room enclosed by two water and fire-proof bulkheads, and in the after end of the boat is a large lazarette and tank room. The water tanks are below the floor of the officers' and crews' quarters.

The deck arrangement is well laid out and gives a large space for operating the forward gun and a good room aft for a small stern rapid-firing chaser. There is also a large chart and wheelhouse located slightly aft of amidships, with a bridge above which can be used in fine weather or when it is difficult to see from the pilothouse. There is duplicate steering and controlling apparatus in both the pilothouse and bridge. The bridge is also handy to the signal and wireless mast. The wireless mast is a steel pipe with a housing wooden topmast which may be hoisted much higher than shown on the plan. There is also a lookout platform or crow's nest built on to the mast.

There should be a heating system installed, preferably hot water, so as to heat the entire boat in the winter. The guns shown are a three-pounder forward, although there are numerous types that would be suitable for the forward gun, which is the largest; a one-pounder aft, and two machine guns could be mounted on top of the pilot-house.

* * *

2,000 Engineer Officers Wanted by the Government

A call has been issued by General W. M. Black, chief of engineers, U. S. Army, for approximately 2,000 engineers to fill vacancies in grades of first lieutenant and captain in the engineer officers' reserve corps. The successful candidates will be commissioned at once, and after a short course of training in military engineering will be assigned to duty with the engineers' troops and sent overseas as soon as possible. Applicants must be in good physical condition and engaged in the active practice of the engineering profession. The age limits are 32 to 36 years for first lieutenants and 36 to 42 years for captains. Applications should be made to the chief of engineers, Washington, D. C.

Housing for War Workers

DETAILS of the Government's plans for the housing of shipyard workers in localities where such accommodations are lacking have been announced in the construction of Yorkship Village, near Camden, N. J., the first war emergency Government town for shipyard workers. The site of land chosen for the village contains 225 acres of land, on the outskirts of Camden, just within the city line near Gloucester and Westmount. The homes are designed for the employees of the New York Shipbuilding Company, whose large shipyard is located at Camden.

Following the commencement of building operations at Yorkship Village, the Emergency Fleet Corporation expects to establish similar villages where lack of housing at shipyard establishments is found acute. One of these villages will be on the outskirts of Vallejo for the employees of the Mare Island yards. These plans are now being worked out by Mr. George W. Kelham, San Francisco architect.

According to Mr. J. J. Tynan of the Union Iron Works, the local plant of the Bethlehem Steel Corporation, there is no likelihood for the present of a similar village being constructed at San Francisco or Oakland.

Both these cities, according to Tynan, have sufficient housing accommodations for all the shipyard workers at present employed.

The plans for Yorkship Village call for the development of 97 acres and the erection of 907 houses, some stores, apartments and a theater. The entire tract has space for 2400 lots and about the same number of dwellings. Sewers, lights and gas are being brought in from Camden. The authorities of Camden will supply a school. A highway with a new trolley line leads to Gloucester, and a new highway leads to Camden.

There are generous playgrounds for the children, a spacious school lot, and a space for gardening for workers who desire land for that purpose. In the houses the architect, Electus D. Litchfield of New York, has devised a charming series of Colonial exteriors in brick and in stucco. The creation of a whole town in Colonial architecture will set a novel standard in town harmony.

The improvements on a typical lot will cost $450. A typical house will cost $2,700.

There are to be 243 groups altogether, composed of 27 types of houses in 70 different combinations, with broken roof lines the rule.

The bulk of the money for the construction of the village is loaned by the Government through the Emergency Fleet Corporation to the New York Shipbuilding Company.

* * *

Largest Wooden Ships Adopted by Corporation

THE largest wooden ship ever built is to be turned out in numbers by the Emergency Fleet Corporation. It will be a new model, 5000-ton type, standardized and approved by both the American Bureau of Shipping and Lloyds. Mr. L. N. Prior, naval architect, has announced details of the new design.

It was decided that the 3500-ton boat was too small a unit for the needs of the Shipping Board. Naval architects started to adapt the Daugherty design of a 4700-ton ship to a 5000-ton ship. These plans were originally donated to the Emergency Fleet Corporation through the generosity of Mr. A. A. Daugherty, president of the National Shipbuilding Co., Orange, Tex.

Numerous changes in designs were, however, found to be advisable in the larger ships.

The project to build a wooden ship of this size is without precedent in the history of shipbuilding and it was Mr. Schwab's wish that the best talent in the world of shipping be consulted. A conference of naval architects and shipbuilders was held and the details of the new craft were decided upon. The design now is under way in the Emergency Fleet Corporation's offices and will be completed within a short time. Meanwhile the Corporation is continuing to let contracts for the Ferris type to keep the wood yards busy.

It has been decided to use the majority of wood ships in the coast-wise trade and to get the maximum of carrying capacity it is planned to construct the new vessels so that they may be able to tow barges. In this connection it is announced that plans are being completed for the building of 2500-ton towing barges.

Plans for the new steel steamers contemplate the purchase of 100 electrical propelling sets, suitable for large-size cargo steamers, and of the type satisfactory in naval vessels. This is an innovation for merchant ship construction. The experience of the naval vessels, however, indicate a remarkable economy and dependable action from electrical propelling machinery. The ease of manipulation that is a feature of this mechanism also is an attraction, it being said that running an electrically propelled ship is not much more difficult than running a trolley car.

The problem of obtaining men to act as electrical engineers on the vessels has been solved, it is believed, by the decision to ask for the services of men in charge of big power plants throughout the country. As soon as these men get their "sea legs" they will be qualified to take charge of the electrical apparatus on the new ships.—Emergency Fleet News.

* * *

Building Curtailment Lessens Lumber Production

A TOTAL computed lumber cut for the United States in 1917 of 35,831,239,000 feet is announced by the Forest Service. This figure is based on reports received up to May 15 from 16,408 sawmills out of the 24,815 believed to have operated last year. It is estimated that the actual cut in 1917, on the basis of compiled figures, was approximately 10 per cent less than the production in 1916.

The falling off in lumber production during the past year is attributed principally to largely decreased private building operations, the scarcity of labor in connection with small operations, transportation difficulties, curtailment of demand on the part of wood-using industries, and a more or less general dislocation of lumber distribution through ordinary channels of trade. A considerable portion of the total quantity produced was utilized in meeting the exceptional demands for Government construction and other war emergency projects, including ship material.

The State of Washington was again the largest producer, with a lumber cut of 4,570,000,000 feet; Louisiana was second, with 4,210,000,000 feet, and Oregon third, with 2,585,000,000 feet, crowding into the fourth position Mississippi, with a cut of 2,425,000,000 feet.

Southern yellow pine, with a total of 13,539,464,000 feet, forms 37.7 per cent of the total cut. Douglas fir, its nearest competitor, is credited with 5,585,000,000 feet. White oak and white pine are each credited with 2,250,000,000 feet.

The number of mills in operation reporting in 1917 was smaller than for the two preceding years.

A comparison of the computed cut for 1917 with the total cut of the previous year in the larger producing regions shows a decrease of about 10 per cent in the southern yellow pine group of States, a decrease of 23 per cent in the North Carolina pine group, and a decrease of 11 per cent in the Lake States. On the other hand, there was an increase in production of 3 per cent in Oregon and Washington.

UNITED STATES NATIONAL BANK, PORTLAND, OREGON
A. E. Doyle & Co., Architects

INTERIOR UNITED STATES NATIONAL BANK, PORTLAND
A. E. Doyle & Co., Architects

MAIN CORRIDOR, FIRST STORY, UNITED STATES POSTOFFICE AND COURT HOUSE, SAN FRANCISCO. JAMES KNOX TAYLOR, SUPERVISING ARCHITECT

UNITED STATES POSTOFFICE AND COURT HOUSE, SAN FRANCISCO
James Knox Taylor, Supervising Architect

Development of Federal Architecture in California

Progress from Early Types Shown by Recent Designs

By WILLIAM ARTHUR NEWMAN, Architect

WITHIN the past few years, the United States Government, acting through the Supervising Architect of the Treasury Department, has completed new federal buildings in all the larger cities of California, including also Santa Barbara, Alameda, Riverside, Santa Cruz, Hanford, Pasadena, Fresno, Grass Valley, San Diego, Chico, Eureka, Santa Rosa and Berkeley, and more new buildings are under construction and in prospect. It is the present intention, however, to wait until the close of the war before actual construction is begun on all but the most necessary of the prospective buildings.

So rapid has been the growth of population in the cities of this state, it has been the rule, rather than the exception, that within a few years after a Government building has been completed, it is entirely inadequate and larger accommodations are required.

This may be illustrated by the view of the old three-story Custom House and Post Office building, San Francisco, constructed in 1856, at a cost of $450,000, on Battery street between Washington and Jackson. This building was principally of brick, with a cement plaster exterior. At various periods up to 1891 three frame additions were constructed to the building, which was finally razed in 1903 to give place to the present Custom House building.

To the left of the old Custom House is seen the old Appraisers building, a small, two-story-and-basement annex, which was also outgrown and replaced by the larger Appraisers four-story brick building, shown in the foreground in course of construction.

In this view it will be noted vertical iron rods with which all brick piers, walls and floors were reinforced throughout the building. This picture, taken in 1874, it is said, makes worthless certain patents for reinforced brick construction which have been issued in recent years.

UNITED STATES APPRAISERS' BUILDING (IN COURSE OF CONSTRUCTION), JUNE 20, 1874

Old Custom House (center), old Appraisers' Store (left).

UNITED STATES MINT (IN COURSE OF CONSTRUCTION), MARCH 31, 1873

A. B. Mullett, Supervising Architect, Treasury Department

Many changes have occurred in building construction since this time. In these early views, one notices the absence of great piles of structural steel, of hoisting engines and derricks now customary for a building of this size. The Government superintendent and contractors are not wearing silk hats at their work today, as is noted of the two seated on the foundation wall, and hideous bill-boards on the fence enclosing the Government site are no longer tolerated.

In 1853 the Treasury Department purchased the site and building on Commercial street where the present old Sub-Treasury now stands. This was occupied as a branch mint until the completion of the present Mint on Mission street. The minting business at that time was conducted under a contract with private parties.

This building was reconstructed in 1877, as a Sub-Treasury, and after the great fire of 1906, was again reconstructed as a one-story building and occupied until the completion of the present new Sub-Treasury building on Pine street.

The present Mint was commenced in 1869, and occupied in 1874. This is one of San Francisco's best examples of the Roman Doric, and cost $2,130,512, being at the rate of $1.27 per cubic foot. The basement walls are of granite, and the superstructure of sandstone from Newcastle Island, British Columbia. Floors also are of granite and Alberene stone. Notwithstanding the disintegrating effect of acid fumes from the refinery, the six sandstone monolithic columns of the main entrance portico, 31 feet high, are in a perfect state of preservation. I know of no other sandstone or limestone columns on the Pacific Coast showing such a record as these do. The beams used throughout are iron; the building having been constructed before the era of structural steel. In the attic may be seen these beams still bearing the original red lead paint in excellent condition.

The view shown of this building is one of the customary monthly progress pictures taken during construction. It has been found that these progress pictures show details of construction which are on many occasions very valuable after work has been covered up and alterations have to be made.

In 1905 was completed the present Post Office and Courthouse building in San Francisco. Both in design and construction, it is considered one of the finest examples of the Italian Renaissance in America. Its walls are of Raymond granite, and it is elaborately finished on the interior with the choicest imported marbles, carved mahoganies and bronzes. It is four stories, and cost $2,430,000, or 52 cents per cubic foot.

The new Custom House, San Francisco (1911), is five stories, faced with Raymond granite, and on the interior is handsomely finished in marble and oak. This building cost 62 cents per cubic foot, or $1,600,000.

The exterior of the new Sub-Treasury (1915) also is of granite, beautifully finished with marbles and bronzes in the main banking room and offices of the Government officials. This building, which is the banking center for the Government on the Pacific Coast, cost $470,000, and is equipped with vaults which are equal to the finest and strongest in the world. When compared with the old Sub-Treasury, it indicates somewhat the evolution which has occurred in the national architecture during the past forty years.*

*A description of the new Sub-Treasury may be found in "The Architect and Engineer" for July, 1915.

UNITED STATES POSTOFFICE, COURT HOUSE AND CUSTOM HOUSE, LOS ANGELES
James Knox Taylor, Supervising Architect

MAIN ENTRANCE, UNITED STATES CUSTOM HOUSE, SAN FRANCISCO
Eames & Young, Architects

In Los Angeles a three-story Post Office and Courthouse was erected in 1892 at a cost of $124,000, but was soon so cramped that Congress authorized the present six-story structure at a cost of $1,213,000. This was erected in 1910—of Raymond granite the first two stories, with Arizona red sandstone above. The corridors are elaborately finished in white marble and oak. For two years this building has also proved inadequate for the Post Office requirements, with its ever increasing services and the parcel post.

Among recent federal buildings, there is none more attractive than the Post Office in Santa Barbara in the Spanish Renaissance. Walls are of brick, finished in light cement, with marble trimmings and solid bronze balconies and entrance grilles. The interior is beautifully handled in polychrome terra cotta and marble, and the public lobby is designed as a patio, around which are grouped the service windows of the Post Office. A feature of this lobby is its large movable skylight, which covers the entire area and can be rolled back on warm summer days, forming a delightful open interior court. The building cost $115,000.

The Alameda Post Office (1914) cost $103,000, and is faced with Rocklin granite. In the public lobby are $23,000 worth of ornamental bronze and Botticino marble. This building is considered one of the best examples of its type and size designed by the Supervising Architect's office. It was constructed under my personal supervision, and has naturally for me its own peculiar charm; nevertheless, there is no question of the satisfying solution it presents in its purity and sincerity of purpose as a modern post office.

The two-story Post Office at Riverside (1914), with its light plastered wall surfaces and red tile roof, cost $97,000. It is an interesting building, along the lines followed by the Mission padres of the Spanish Renaissance, thoroughly in keeping with its Southern California surroundings and atmosphere.

The new federal building in Santa Cruz is faced with Kyune Utah sandstone, with granite base and steps. This building is in what is known as modern Renaissance. The public lobby is finished in cement plaster and redwood. The building cost $88,000.

The Hanford Post Office (1916) is another attractive Renaissance building of brick with cement plastered walls, and a very interesting polychrome terra cotta treatment in blue and cream for column caps, architrave and trimmings. The building cost $57,000.

The extent of the operations of the Supervising Architect is surprising to many who are not in touch with this work, and it is of interest to note that there are nearly 1200 completed buildings in the United States and its dependencies under his control. At the time the war started, a new building was being completed, ready for occupancy at the rate of one every four days, with annual contracts amounting to over $12,000,000.

The volume of public building work of this office is by no means limited to the above, which takes no account of an average of 1500 contracts let annually for up-keep and repairs of the occupied buildings, requiring the preparation of specifications, and in many cases drawings, involving expenditures ranging as high as $20,000. The office has on its rolls 101 technical employees.

Marked progress is being made in the direction of standardization through the designing of a master type of building for small communities, which, with modifications to meet special local conditions, was utilized in 1917 in some thirty odd communities.

In 1915 the Secretary of the Treasury issued an order establishing a classification of public buildings intended to provide a rational system

UNITED STATES POSTOFFICE, HANFORD, CALIFORNIA
Oscar Wenderoth, Supervising Architect

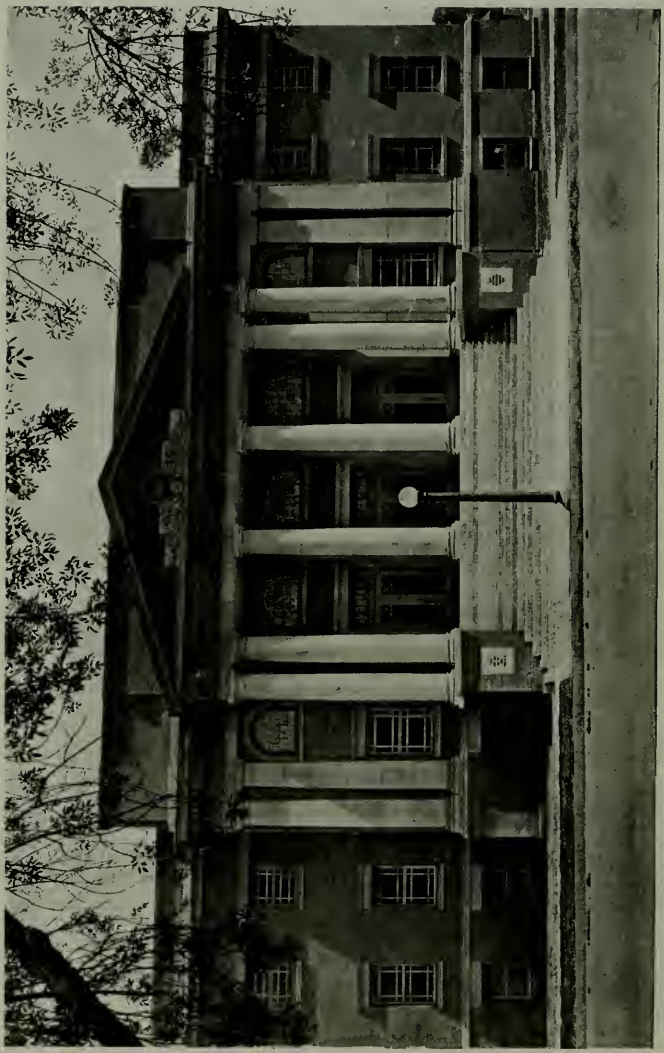
UNITED STATES POSTOFFICE, SANTA BARBARA, CALIFORNIA
Oscar Wenderoth, Supervising Architect

PUBLIC LOBBY, UNITED STATES POSTOFFICE, SANTA BARBARA, CALIFORNIA
Oscar Wenderoth, Supervising Architect

of uniformity and business economy in designing and constructing federal buildings suitable to the public needs, and without calling for waste of Government money. This system is being applied to all the new buildings, and with such results as to indicate satisfactorily that its continued use will accomplish its purpose.

A very considerable part of the work of the Supervising Architect consists in the equipping, maintenance and repair of public buildings. Efforts at standardization of equipment and furniture have also met with success.

A great deal of credit is due to the present Acting Supervising Architect, Mr. Jas. A. Wetmore, for what is being accomplished by the office under his control, and for the spirit of loyalty and co-operation he has inspired in the large corps of highly trained specialists and technical employees associated with him.



CENTRAL CHRISTIAN CHURCH, PHOENIX, ARIZONA. ROBERT H. ORR, ARCHITECT

CENTRAL CHRISTIAN CHURCH, PHOENIX, ARIZONA
Robert H. Orr, Architect

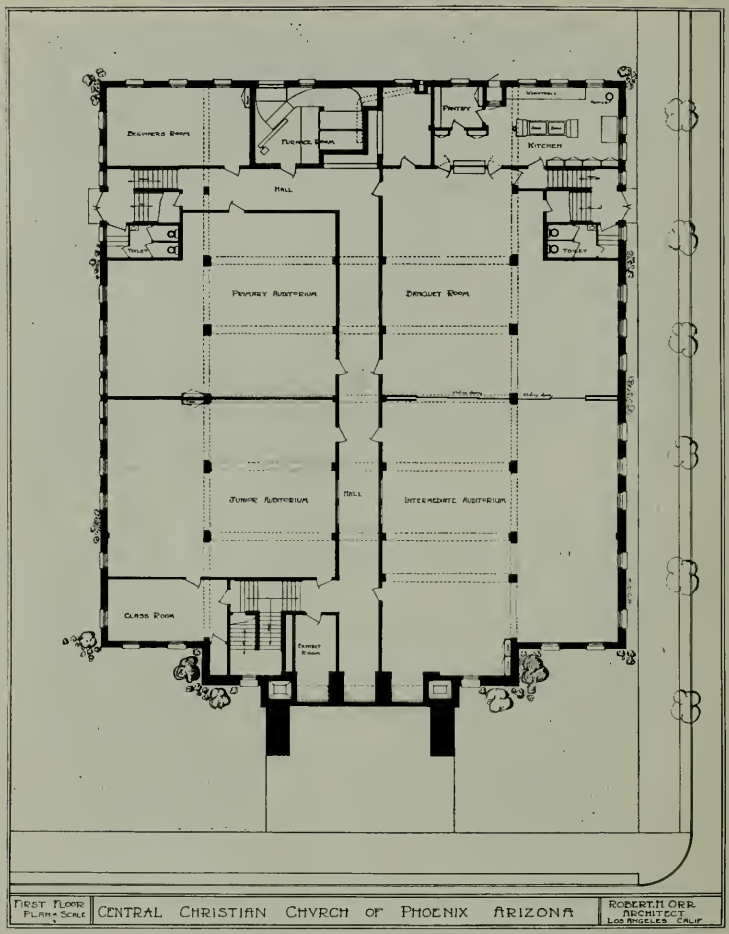
The Central Christian Chuch of Phoenix, Arizona

THE Central Christian Church of Phoenix, Arizona, dedicated March 31, is designed in the semi-classic. The consideration was to develop a plant having all the conveniences of a combination church, auditorium and bible school by making one serve both purposes and grouping the Sunday school rooms adjacent thereto, making the latter accommodate the occasional overflow.

The long warm summers of Arizona made it exceedingly desirable that the auditorium be so placed that a minimum of wall surface be presented to the direct rays of the sun and a maximum amount of free air circulation be maintained. The auditorium, therefore, was surrounded by closeable class rooms and only the upper part was left exposed for light and ventilation. This has produced an auditorium surprisingly cool in hot weather. Most of the Sunday school classes will meet in the basement, where a low temperature may also be obtained on account of the small area of exposed wall surface.

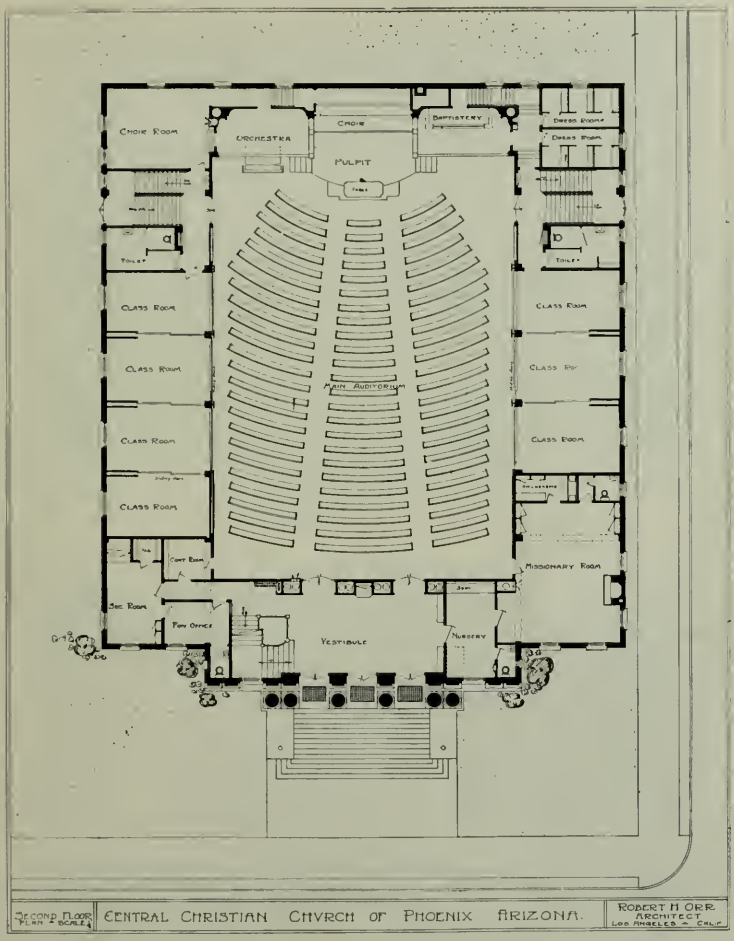
The building is a rectangle, 100x120 feet, with a basement, main floor and gallery. A broad flight of steps leads to a well-proportioned vestibule. To the left is the main stairs leading to gallery and basement, and beyond this is a suite of offices for the assistant pastor and Sunday school superintendent. The pastor's study is directly over these and reached by a private stairway leading from the first landing of the main stairway. An attractive feature of the pastor's study is an alcove for the solemnizing of marriages, and, if need be, the entire office may be converted into a dignified wedding parlor.

To the right of the vestibule are nursery and missionary rooms—the nursery for the care of the infants while the mother attends worship and the missionary room for the benevolent organizations of the church. This



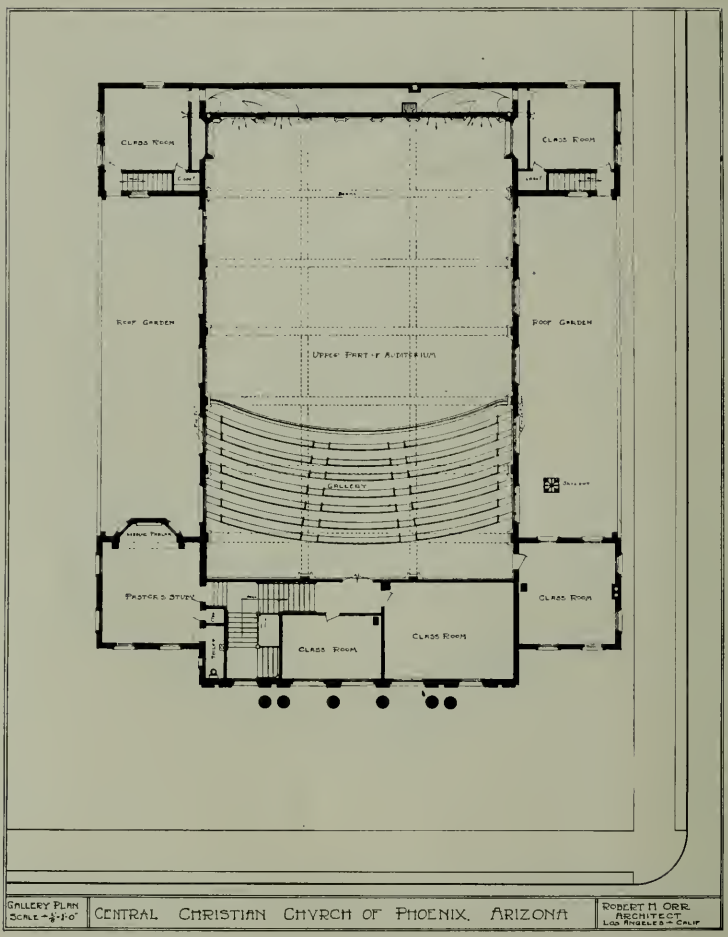
room is equipped with built-in cases and files for missionary literature and a kitchenette for serving light refreshments.

Across the vestibule is the main auditorium, 60 feet wide, running through the remaining length of the building, except for passages to the choir loft and baptistery. Its dimensions are 60x90 feet, with a 26- to 28-foot ceiling, the floor being sloped and bowled. Flanking the auditorium are large class rooms with folding glass partitions. Other appointments are double stairways to the exit, basement and gallery, choir room and choir space, orchestra and organ console space, pulpit, baptistery and dressing rooms, toilets, lavatories, etc.



On the gallery floor are class rooms at the four corners of the building and across the front. On each side along the auditorium and between the corner class rooms are roof gardens, which also serve as exits from the gallery. Here it is possible to hold evening meetings or morning sessions on the north side of the building when the weather is exceptionally warm.

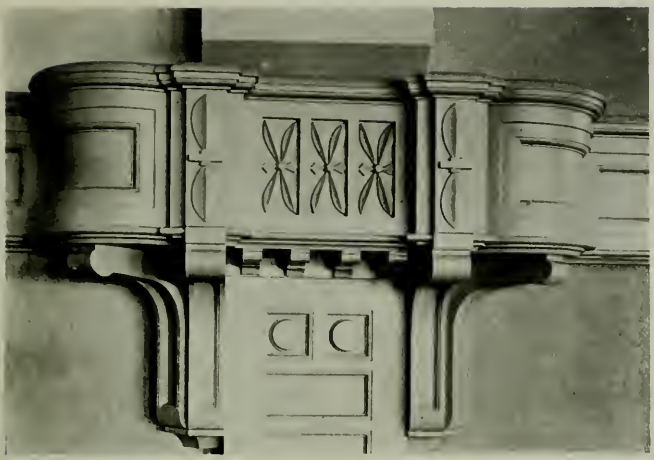
The entire basement will be used for departmental work, beginners, primary, juniors and intermediates, with banquet room, kitchen, serving room, pantry, and furnace room. The seating capacity of the auditorium



and gallery is 1,400, but the flexibility allows this to be increased to 1,800 without crowding.

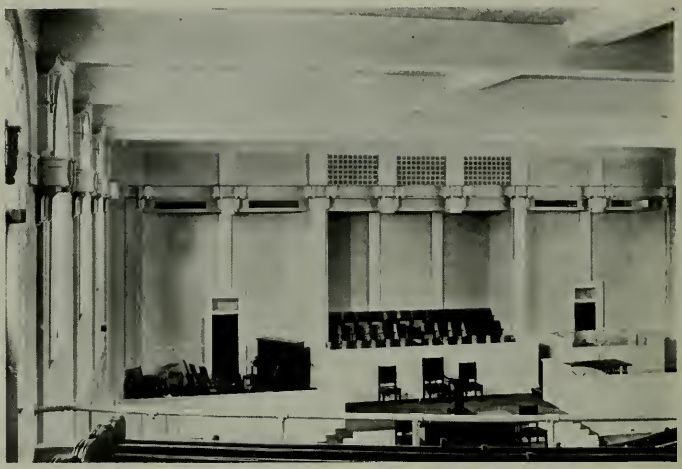
The auditorium is indirectly lighted and has opalescent glass windows. The building throughout is heated and mechanically ventilated by a forced draught, with a capacity of 26,000 cubic feet of air per minute.

The construction of the building is reinforced concrete and brick walls, timber floors and roof. Pressed brick is used for the facing, with art stone trim and columns.



INDIRECT LIGHTING BOX, CENTRAL CHRISTIAN CHURCH, PHOENIX, ARIZONA
Robert H. Orr, Architect

INTERIOR, CENTRAL CHRISTIAN CHURCH, PHOENIX, ARIZONA
Robert H. Orr, Architect



INTERIOR, CENTRAL CHRISTIAN CHURCH, PHOENIX, ARIZONA
Robert H. Orr, Architect

Unsightly Efflorescence on Facing Brick

IT has been noticed that efflorescence is more pronounced under the copings, sills, belt courses, etc., or wherever a part of the building has been subjected to a greater wash by water. This indicates that the mortar, as well as the brick, is absorbent, causing the walls to become thoroughly soaked during the winter months, while the warm rays of the sun attract the moisture to the exterior, bringing with it the lime, magnesia, and alkali salts contained in both the brick and the cement mortar.

It is agreed by all interested in brick construction that both brick and cement mortar are absorbent, yet little has been done to overcome this objectionable, serious, and dangerous obstacle. Hydrated lime will add to the plasticity of the mortar, increase the density, and, being a water retainer, will add crystallization when used in places where it is difficult to apply water at frequent intervals. Tests have repeatedly shown that slabs containing 10 per cent hydrated lime, when taken out of the water after one hour, will contain a larger percentage of water than a similar sample of cement and sand, yet on the surface the lime sample is apparently bone dry.

A remedy for the above problem, now being tried out and which has withstood a test of over two years, is impervious cement mortar, to consist of (a) one part approved portland cement; (b) three parts sharp, clean sand, showing not over 35 per cent. voids by water; (c) 10 per cent. of weight of the cement of hydrated lime (sufficient to add to the plasticity of the mortar and retain enough water to perfect crystallization); (d) 2 per cent. of weight of the cement Medusa paste waterproofing. Each gallon (eight pounds) to be mixed with equal parts of water, later adding 20 more gallons. All mortar to be gauged with this solution.

If the sand is damp a one to fifteen solution should be used to offset the moisture already in the sand. All exterior brick and stone work to the depth of 12 inches should be embedded in this mortar. The extra cost of waterproofing the cement mortar will not exceed $1 per M bricks, it is said.

The Roof Over Your Head — Shall it be of Shingles, Slate or Tile?

By ERNEST IRVING FREESE, Architect

Here, the masonry character of the walls makes slate the consistent roof covering.

THERE is a law that governs the relative fitness of things. It might be called the law of congruity. A wooden-walled bungalow surmounted by a tiled or slated roof is a violation of this law, for the material of the wall belies the material of the roof; the former is humble, the latter presumptuous in comparison; the one denotes economy and restraint, the other indicates unwarranted extravagance; one is burnable and subject to decay, the other is fireproof and durable. The incongruity is here decidedly marked because of the absurdity of putting a non-burnable roof upon a house of which the walls are in nowise fire-resistant. Of what avail is an everlasting roof if its supporting walls can rot or burn from beneath it?

In the case of a brick-walled and shingle-roofed house, the incongruity of the two materials is less striking because of the change in their relative positions, for here the supporting wall, rather than the supported roof, is of the imperishable material. Nevertheless, this transposition of materials does not alter their mutual inconsistency; the wall now signifies fire-resistance and permanence, while the roof is devoid of these attributes. Moreover, a shingled roof, on a house of masonry, implies a lack of means or a niggardliness that does not actually exist; it inevitably suggests that the house-builder either became suddenly impecunious or was seized by an overwhelmingly miserly impulse at the very instant that his evolving house reached the cornice-line. Wherefore a shingled roof was substituted for one of slate or tile, and congruity became incongruity.

Perishable wooden shingles cannot be reckoned a consistent roof-covering for a house of masonry. On the other hand, to roof a wooden-sided house with slate or tile is to put the cap of extravagance atop the cloak of economy. But to roof a house of brick with slate or tile, or a wooden-sided house with shingles, is to comply with the law that governs the fitness of things.

The Roof of Shingles

The nature and texture of shingles renders them admirably adapted to staining. Soft greys, greens or browns are the colors that harmonize with the various aspects of the landscape. Or, untouched by oil or stain, they can be allowed to assume the mellow tints of time. This, however, lessens their durability. In any case the treatment of the roof-covering should be in keeping with that of the wall. If the durability of the latter be increased by a preservative coating of stain or paint, then the durability of the former should likewise be increased.

The natural manner of producing shingles is such that no two of them are of the same width and, unquestionably, it is this characteristic that is the chief charm of a shingled surface. Mechanical pattern-work, or any scalloping that necessitates the shingles being of certain exact dimensions, destroys this charm.

THE SHINGLED ROOF ON THIS CHARMING BUNGALOW IS A FITTING CAP FOR ITS CLOAK OF TIMBER

The apparent thickness of a shingled roof-covering is practically nothing, while its actual thickness is less than one inch. No amount of padding can successfully deceive anyone into thinking otherwise, for it is not the nature of shingles to be of any appreciable thickness. By what manner of reasoning, then, can a shingled imitation of a thatched roof be justified? Why lay shingles in drunken, wriggly courses? Why steam and bend them into unnatural curves at hips and valleys? Why pad them at the eaves and again bend them to that padded and drooping thatch-like contour so that the actually thin-clad roof appears a foot in thickness? . . . Surely, it can not be gainsaid, a shingle-thatched roof is a pretense that does violence to the nature and limitations of shingles. Moreover, it is a pretense exceedingly expensive. But this last condition, as in many another instance, is a fortunate one, for it reacts in a great measure against the perpetration of the pretense itself.

There are many simple devices that can be used to relieve the uniformity of shingled surfaces—devices that do no violence to the law of the fitness of things. For instance, the shingles might be laid with uncommonly wide joints, say an inch across, thus emphasizing each individual shingle by contrast of light and shade upon its surface and edges. For another instance, the shingles might be laid in regularly diminishing courses, say from an exposure of six inches at the eaves to two inches at the ridge. This device gives to the roof an apparently greater expanse by the simple process of accentuating the natural effects of perspective. However, to reverse the order of contraction would be to give the lie to perspective and so render the resulting appearance meaningless and confusing. For yet another instance, the horizontal effect might be made predominant by merely doubling or trebling every fifth or sixth course of shingles, so that the lower edges of the recurrent courses would show twice or three times as thick as those of the intervening courses, thus dividing the roof into horizontal bands. This simple and economical device adds interest and direction to a roof that might otherwise be only a monotonous expanse. Finally, the whole secret of obtaining a pleasing effect with shingles, or any other surface-covering material, is this: study the characteristics of the material—then make those characteristics *emphatic*.

Other Roof-Coverings

You have seen that the law of congruity demands that a wooden house be roofed with shingles. By the same token, a masonry house demands a roof of slate or tile. As regards the choice of either of these two suitable materials, the one should be chosen which harmonizes in color with the colors of the immediate landscape, as well as with the color of the supporting walls.

THE SHINGLE ROOF LOOKS WELL ON A HOUSE OF THIS TYPE

EAST LOGGIA, FROM ROOF OF SUMMER DINING ROOM, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA.

Willis Polk & Co., Architects

(The terra cotta tile roof is well placed here.)

SAN JUAN CAPISTRANO MISSION, SHOWING THE ORIGINAL SUN-BAKED CLAY TILES
(Probably over 135 years old)

Have you ever seen a red-slated or red-tiled roof upon a house of red brick? If so, you know that the effect is lifeless and displeasing. Nature uses red very sparingly and, even when so used, it is invariably balanced by an expanse of cooler color. Profiting by this example, let the house of red brick be relieved not only by "green things a-growin'," but also by a roof-covering of a complementary color to that of the wall beneath. In this case the roof-covering might consistently be of green-glazed tile or of slate: not red slate, but slate of cool greens, blues or purples, whichever harmonizes best with the particular red of the walls. This suggestion can not be over-emphasized, especially as regards a house built in a wintry clime, for nothing else could be more bald or outlandish than a red-walled and red-roofed house set in a verdure-denuded, snow-clad landscape.

On the other hand, suppose the masonry walls to be of a color other than red, and suppose further that the house be situate in a land of year-around summer. In this instance there could be no valid objection to a red-colored roof, for the red of the slates, or of the tiles, would harmonize well with the gray of the walls and with the green of the perpetual foliage. In the final analysis, then, it would seem that red, as a roof color, is unsuited to any but a tropical or sub-tropical clime, for it clashes harshly with a greenless winter landscape; but the greens of glazed tile, or the greens, blues and purples of slate, are harmonious with all the varied aspects of nature.

Whatever be the color of the chosen material, let that color be not absolutely uniform over the entire roof. Let the shades vary slightly in the individual pieces, and so give life and sparkle to what might otherwise be an exceedingly monotonous and dull-appearing roof surface. It is the very nature of both slate and tile that no two pieces of either are of exactly the same surface texture or shade of color, and to assiduously carry the matter of color matching to its extremity indicates a capacity for application that effectually belies any probable capacity for appreciating the natural possibilities of the given material.

We are cursed with the tyranny of painted surfaces—surfaces absolutely flat and uniform in color. If this be not so, then why should any mortal deliberately and expensively strive to ape, with slate or tile, the color uniformity of a painted surface?

Slate is riven from the mountain side. Tile is put through the fire. Why strive to hide the characteristics begotten of these natural environments? Why not let slight variations of color and texture be present on the roof even as they were present at the quarry or in the kiln? This does not mean that slate or tile should be laid hit-or-miss. On the contrary, a certain amount of human intelligence must here be displayed by combining the various shades of color into one harmonious whole; harmony and variety must be co-existant.

If slate is the chosen material, a pleasing effect can be obtained by starting the green slates at the eaves and then, by a harmonious and subtle gradation, letting the various blues follow the greens, and the purples follow the blues; thus, between the light green at the eaves and the dark purple at the ridge, blending the various shades of green, blue and purple together in a crescendo of color. Or the order of gradation might be just the reverse, from deep purple at the eaves to light green at the ridge. In either case, the resulting appearance possesses a peculiar charm that can be achieved with no other material—it is essentially and delightfully *slaty*.

Unlike shingles, slate is inflexible. It is, therefore, naturally unfitted to be applied to the roof in courses of decreasing exposure after the manner of flexible wooden shingles. To procure a weather-tight roof, and insure against possible breakage, each slate should be laid in close surface-contact with its neighbor. It is quite possible to do this and, at the same time, procure the diminishing perspective-like effect above mentioned. However, with slate the way is expensive and involved, and the result does not do justice to the means. In truth, it would be far more in keeping with the nature and limitations of the material to lay slate in regular and uniformly-spaced courses instead of adopting a method that is peculiarly adapted to wooden shingles.

The Roof of the Stucco House

In compliance with the law of congruity, the roof-covering of a stucco house should approach, in durability, the seeming durability of the subjacent wall. In other words, if the stucco house is apparently of masonry construction, then the roofing material might be either slate or tile. On the other hand, if the conditions are such that the walls appear to be constructed of timber, then the roof-covering should be of the same material.

There is a neutral point at which a stucco house baffles constructive classification; that is to say, there then exists no dominant characteristic in its finished exterior appearance that serves to indicate whether the wall construc-

A ROOF OF CALIFORNIA MISSION TILE

tion is of masonry or of wood—it might be either. So, in this case, it remains for the roof to furnish the key to the baffling identity of the walls. If the house were roofed with shingles, it would reflect a wooden character, while if the roof-covering were of slate or tile, a masonry construction would be implied.

As stucco is neutral in character, so is it in color. Wherefore the selection of a roof-color for a house of this material is governed solely by the colors of the climatic landscape. In fact, as regards roof-material and roof-color, no other type of house offers so wide a choice. However, this statement is not an implication that the selection of a roof-covering for a stucco house is a matter of little importance. Quite the reverse, it is of importance all the more, for the character and appearance of the house is, in this peculiar instance, almost solely dependent upon the material and color of its roof.

What has heretofore been written regarding red, as a roof color, applies in full effect to the stucco house. The imagination inevitably pictures a white-plastered, red-tiled house as nestling in a riot of sun-sparkled tropical greenery. Nothing else could be as charming. Nothing else could be more in keeping with the fitness of things. But . . . picture that house in the midst of bleak winter; the charm vanishes with the greenery, and the erstwhile harmonious red of the roof becomes an ugly blot on the snowy landscape. Yet . . . let the red of the roof be then replaced by green: the harmony, if not the charm, is at once restored.

* * *

Curtailment of Construction

GOVERNMENTAL burdens have been impartially distributed upon all industries, and the building industry is particularly unfortunate in having applied to it alone, without a clear definition, the essential and non-essential policy. And until this is either more clearly defined or changed to the general policy of priority the industry must continue to place the most constructive interpretation possible on the statements of the Secretary of the Treasury, even though it may not understand why further efforts should be made to free its labor while its labor is already in idleness, or to free its materials while many of its materials are not being used, as well as why many of the non-essential and luxury producing industries are allowed the use of capital, labor and materials, unhampered by publicity and direct interference.

In exchanging the ownership of funds, construction frees and gives earning power to capital otherwise locked up in land, while not exhausting but creating capital out of natural resources and raw materials, the majority of which are not essential for Government use. Buildings are one of the most permanent forms of wealth, a means of producing more wealth and one of the most secure bases of increased credit. The withholding of funds from circulation through this industry tends to decrease rather than increase national wealth.

Money saved by curtailing the consumption of food, clothing or luxuries is added to the national wealth, but the curtailing of building does not add to the national wealth; it is a deferred charge, part of our war debt, to be paid after the war is over at an increased cost, probably by a disorganized industry.

The curtailment of building is not a saving but an expense during the war, because through lack of normal facilities the cost of everything is increased, since buildings are primary tools of industry, necessary for the production of all other tools of industry as well as for the production of the necessities of life, food, clothing and shelter.

If in an endeavor to free labor, materials and capital for future Governmental use we are holding in idleness labor which we are unable to assimilate we are confronted with the economic law of Diminishing Returns.—From an address by F. T. Miller, president of the F. W. Dodge Co., New York City.

U. S. Standards for Industrial Housing

UP to a short time ago the possibility of the United States Government establishing standards of construction for the homes of the people had never been given serious consideration. With the probability arising, however, of the nation expending many millions of dollars for workmen's homes, it has become necessary for the Government to formulate such standards, if for no other reasons than to safeguard its investment and to work out a plan of construction which will be as economical as consistent with American standards of living.

The standards which have thus been formulated by Uncle Sam as a part of his building programme are given here in full:

Text of the Government's Standards for War Housing of Permanent Construction

These standards are not intended as inflexible requirements, but any plans which fail to conform to them are not likely to be accepted unless supported by very strong reasons. Local building codes, housing laws, and similar ordinances are to be followed except where they permit lower standards than herein set forth.

1. Types of Houses (Principal types only).

Type 1. Single family house.
Type 2. Two-family house.
Type 3. Single-family house with rooms for lodgers or boarders.
Type 4. Lodging house for men.
Type 5. Hotel for men.
Type 6. Lodging house for women.
Type 7. Hotel for women.
Type 8. Tenement house.
Type 9. Boarding house.

General Provisions

All types of houses to conform to these general provisions and in addition to certain special provisions as later indicated.

1. *Arrangement.* Row or group houses normally not to be more than two rooms deep.

2. *Basements.* No living quarters to be in basements.

3. *Closets.* Every bedroom to have a clothes closet, opening from the room. Built-in wardrobe dressers will not be accepted. Normally such closet to be not less than 22 inches deep and with door. Closets to be supplied with rods to take coat hangers.

4. *Cooking.* Gas preferred, but flue for coal stove to be provided, all flues to be lined. The question of whether or not cook stoves are to be provided with the house to be considered at the time materials are being ordered.

5. *Fences.* Board fences will not be accepted. Hedges or open metal fences desirable. Suitable arrangements for drying clothes to be provided. Where there are open metal fences the fence standards can be designed for this purpose.

6. *Furniture Space.* Beds to be indicated to scale on plans (double beds, 5 feet by 6 feet 6 inches; single beds, 3 feet by 6 feet 6 inches). Location of beds not to interfere with windows or doors. It is recommended that beds be free standing and not located in a corner or with the side against a wall. Space to be provided for two pieces of furniture in addition to bed. Hall, stairs and doors to permit easy moving of furniture.

7. *Gardens.* Allotment gardens, conveniently accessible, preferable to increasing the size of the lot to provide for individual backyard vegetable gardens.

8. *Lighting.* Electricity preferred.

9. *Materials of Exterior.* Materials dependent on local supplies; brick, terra cotta, stone or concrete preferred. Outer walls to be insulated against dampness and condensation. Rat nogging to be provided. Roof to be fire resistive; leaders and gutters not essential unless drip will do harm.

10. *Open Spaces.* Side-yard space between adjacent buildings to be preferably 20 feet; minimum, 16 feet; such space to be increased proportionately for each additional story, or part of story, above two stories. If this space is not obtainable because of lot sizes or land values, houses should be built in rows or groups.

Rear-yard depth not to be less than height of building, nor in any case less than 20 feet. Minimum distance between backs of houses to be 50 feet. Layout should contem-

plate future location of garages, which, when not an integral part of the house, should preferably be at the rear of the lot, should not be located closer than 15 feet to the nearest part of house, and should not exceed one story in height.

Front yards or setbacks desirable where practicable; minimum distance from front wall of house to front wall of opposite house to be 50 feet.

11. *Plumbing.* House drain under house and 5 feet outside to be extra heavy cast iron. It is recommended that soil and waste pipes be extra heavy cast iron or genuine wrought iron. Soil and waste pipes to be extended through roof. A 3-inch soil stack preferred where not more than two water-closets are placed on one stack.

Water-closets to be porcelain and wash-down, siphon, or siphon-jet type, with individual flush tank. Open-front seat recommended. Outdoor water-closets will not be accepted. Privies will not be accepted. Cellar water-closets not permitted, except where complementary to accommodations herein required.

Access to water-closet compartments to be from hall or vestibule, never solely from a room. Plunger, pan long-hopper, and range closets will not be accepted.

Hot and cold water to be provided to all fixtures, with proper drains and shut-offs. Wooden sinks and wash trays will not be accepted.

All fixtures to be separately trapped except in batteries of wash trays and combined sink and wash tray, where one trap is sufficient.

Venting of traps to conform to approved practice, except that the back venting of the top or only fixture on a line is not required. Sink and lavatory traps to be connected direct to the vertical wastes, and not to floor branches. Exposed pipes preferred, and, when exposed, wrought iron preferred. Where possible, lines to be concentrated and kept from outside walls.

12. *Porches.* Desirable. To be of durable construction, particularly the foundations; to be restricted from encroaching on minimum side yard or unduly darkening rooms.

13. *Rear Entrances.* In the case of row or group houses there may be access to the rear through minor one-way public streets. Such streets to be not less than 12 feet wide; to be properly paved, curbed, drained and lighted. Private alleys will not be accepted.

14. *Roof Air Space.* In every house there shall be a minimum clear air space of 8 inches between the ceiling and the roof; this space to be provided with adequate waterproof openings for ventilation, at both ends if practicable.

15. *Rooms, Number of.* Bathrooms are not to be counted as rooms.

16. *Stairs.* Risers to be not more than 8 inches high and treads to be not less than 9 inches wide. Winding stairs will not be accepted except in types 1, 2 and 3. Not more than two winders will be allowed in series. Treads must measure at least 9 inches wide 18 inches from rails.

17. *Ventilation.* Every room to have at least one window opening directly to the outer air. Two windows in each room generally preferred; one window sufficient in small bedrooms. Each room to have a window area of not less than 12 square feet.

Cross ventilation as direct as possible to be provided for all rooms through windows, transoms, or doors; communicating door recommended between bedrooms in row houses.

Every bathroom to have a window of not less than 6 square feet in area opening directly to the outer air.

Every water-closet compartment to have a window of not less than 4½ square feet in area opening directly to the outer air. A skylight in the roof, with an equal amount of glass area and provided with adequate ventilators, will be accepted in lieu of such window, but skylights are not desirable.

18. *Windows.* Minimum area to be measured between stop beads. Window head to be as near ceiling as practicable. Windows may be double-hung, pivoted, or casement. If double-hung, upper and lower sash to be the same size. In cities with soft-coal smoke nuisance, minimum area to be increased.

Window frames to be designed to accommodate screens and outside shutters. In cold climates, weather strips are recommended.

II. Special Provisions for Types 1, 2, and 3.

In addition to complying with all general provisions, types 1, 2 and 3 are to comply with the following provisions:

Type 1. Single-family house.

Type 2. Two-family house. ("Two-flatter," one family upstairs, one down. For "double house" see "Single-family house, semi-detached.")

Type 3. Single-family house with rooms for not more than three lodgers or boarders.

1. *Agreement.* Types 1 and 3 not to be over 2½ stories high. Type 2 not to be over two stories high.

When detached or semi-detached, types 1, 2 and 3 normally not to be over 3 rooms deep; when in rows or groups, not to be over 2 rooms deep except that the end house of row may be 3 rooms deep.

2. *Cellar.* To be well lighted, cross ventilated, dry and paved or cemented. Minimum clear height under joists, 6 feet 6 inches. When hot-air furnaces are used, minimum height 7 feet. Cellar not essential under whole house. Where climatic or soil conditions make cellar inadvisable it may be omitted, in which case adequate provision is to be made for storing fuel. Where cellar is omitted, house to be set up on masonry piers or walls 2 feet clear from ground; space to be drained, inclosed, and ventilated.

3. *Grouping.* Single-family houses of the more expensive type preferably to be detached houses, but may be semi-detached or even attached in rows or groups. In other cases where land values permit, detached or semi-detached are desirable; otherwise attached in groups.

4. *Heating.* Provision to be made for heating houses. If not otherwise heated, bathroom to be heated from kitchen stove.

5. *Materials of Exterior.* Brick, terra cotta, stone, or concrete preferred; but wood frame clapboarded, shingled, or stuccoed permitted for detached or semi-detached houses not over 2½ stories high. Party walls between attached houses in rows or groups to be of brick, terra cotta, stone or concrete.

6. *Plumbing.* Bathtub (shower is not sufficient).

Lavatory, to be preferably in bathroom.

Sink to be in kitchen; rim 36 inches above floor.

Washtubs with covers, preferably two, rim 36 inches above floor, to be set in kitchen or in well-lighted, dry, and ventilated cellar.

Water-closet to be inside the house in well-lighted and ventilated compartment, with window of 4½ square feet minimum area to outer air, and preferably with impervious floor not of concrete.

7. *Rooms, Height of.* Minimum, 8 feet.

Sloping ceilings and "knee walls" will be accepted only under the following conditions: Roof space above flat portion of ceiling to be of ample size and adequately ventilated; spaces between rafters of sloping portion to be adequately ventilated into roof space; bedroom to have greater window area and better cross ventilation than the minimum permissible for a standard flat-ceiling room; bedroom to have a minimum height of 8 feet over an area of at least 40 square feet with a minimum flat-ceiling width of 3½ feet, and a clear height of not less than 6 feet over an area of at least 80 square feet with a minimum width of 7 feet.

8. *Rooms in Attic.* As a rule, in 2½-story houses, only one bedroom to be provided in the attic.

9. *Rooms, Number and Use of.* In types 1 and 2: For higher-paid workers, five-room type preferred, with parlor, large kitchen, 3 bedrooms and bathroom. Dining room and kitchenette may be provided in place of the large kitchen. Four-room type to be provided sparingly for higher-paid workers. Six-room type, with 4 bedrooms, or 3 bedrooms and parlor convertible into fourth bedroom, suited for abnormally large families only, and should be provided sparingly. Six-room type should normally have parlor, dining-room, kitchen, 3 bedrooms, and bathroom.

For lower-paid workers, four-room type desirable, with parlor, kitchen, 2 bedrooms, and bathroom.

Any house having more than seven rooms to be treated as type 3.

In type 3, in addition to family quarters indicated above, single rooms for lodgers to be provided. In addition to the family water-closet accommodations, a water-closet compartment containing lavatory to be provided for the sole use of the lodgers. Lodgers to have access to their bedrooms and to their water-closet compartment without going through rooms designated for use of family.

10. *Rooms, Size of.* One large bedroom to be provided, size 10x12 to 12x14 feet.

Small bedrooms, minimum size, 80 square feet; minimum width, 7 feet.

Parlor, 10x12 to 12x14 feet.

Dining room, 9x12 to 12x14 feet.

Kitchen (where there is no separate dining room), 10x12 to 12x14 feet.

Kitchenette (only where there is a separate dining room), minimum width, 6 feet; minimum area, 70 square feet.

III. Special Provisions for Types 4 and 5.

In addition to complying with all general provisions, types 4 and 5 must comply with the following special provisions:

Type 4. Lodging house for men.

Type 5. Hotel for men.

1. *Arrangement.* Provision to be made for 75 men or more. Height limited to 4 stories, except in large cities.

2. *Cellar.* Minimum height, 7 feet; to be well lighted, cross ventilated, dry, and paved or cemented. Cellar not essential under whole building. Where omitted, building to be set up on masonry piers or walls 2 feet clear from ground; space to be drained, inclosed and ventilated.

3. *Fire Protection.* If over four stories high to be fireproof throughout.

If over 3 stories high, first floor construction to be fireproof.

If over 2 stories high, non-fireproof building the area of which exceeds approximately 3,000 square feet to be divided by fire walls of brick, terra cotta, stone, or concrete into areas not exceeding approximately 3,000 square feet each. All openings in such walls to be provided with fireproof self-closing doors. Adequate means of egress to be provided to street or yard by an additional flight of stairs, or by fire tower or stair fire escape (fire escape less desirable). All such additional means of egress to be remote from the main stairs and separated therefrom and from the other parts of the building by walls of brick, terra cotta, stone, or concrete, with fireproof self-closing doors at all openings. Such additional means of egress to be so located that no room shall be more than 40 feet from a means of egress. All main egress doors to swing out.

All stairs and stair halls to be not less than 3 feet wide in the clear and to be inclosed in walls of brick, terra cotta, stone, or concrete, with fireproof self-closing doors at all openings. All doors to stair halls to swing into stair hall without obstructing free passage.

Dumb-waiters and elevators will not be accepted in stair inclosure; they should be enclosed in fireproof shafts with fireproof doors; those for dumb-waiters to be self-closing. Inside cellar stairs to be inclosed with walls of brick, terra cotta, stone, or concrete, with self-closing fireproof doors. Standpipes with hose reels on each floor to be so located that any point can be reached with 75 feet of hose.

4 *Heating.* Except where connected with a central plant, provision to be made for independent heating.

5. *Material of Exterior.* To be brick, terra cotta, stone, or concrete, except that wood frame will be accepted for one-story buildings.

6. *Plumbing.* Minimum provision: One water-closet per 12 men; one urinal per 16 men; one lavatory per 8 men; one shower per 10 men; one bathtub per floor, provided there is not less than one per 50 men. Ratio to be increased where there are less than 50 men per floor. Floor and base of toilet rooms to be waterproof, not of concrete. Sufficient water-closets to be provided in the cellar or basement for the accommodation of engineers, firemen, and laundry workers.

7. *Rooms, Height of.* Height for public rooms, 9 to 12 feet; minimum for bedrooms, 8 feet.

8. *Rooms, Number and Use of.* Each lodger to have separate room. Two-men rooms not permitted. (Cubicles and dwarf partitions will not be accepted.)

Each floor to have a general bathroom containing required showers, tub, and lavatories. Each floor also to have a general toilet room containing required water-closets and urinals. Each of the two rooms to have windows opening directly to the outer air, and to be separate but adjoining and communicating. Service closets with slop sinks and space for brooms and pails to be provided on each floor.

Smoking room, reading room, billiard room, physician's room, laundry for washing clothes, superintendent's office and adequate quarters for superintendent to be provided. Unless provided elsewhere in the community, bowling alleys to be in basement.

Hotel (type 5) also to have dining room and cafeteria with outside access thereto, and with pantry, service rooms, kitchen and toilet facilities for men and women employees. An additional general toilet room is to be provided conveniently accessible.

9. *Rooms, Size of.* Single bedrooms to have an area of 70 square feet and be 7 feet wide minimum.

10. *Ventilation.* Bedroom doors preferably to be placed opposite each other and to have transoms or slat panels.

11. *Windows.* One window in each room to have minimum area of 12 square feet between stop beads.

IV. Special Provisions for Types 6 and 7.

In addition to complying with all general provisions, types 6 and 7 must comply with the following special provisions:

Type 6. Lodging house for women.
Type 7. Hotel for women.

1. *Arrangement.* Provision to be made for 75 to 150 women (with less than 75 the unit is not economical; with more than 150 there are difficulties in management and supervision).

Height limited to 4 stories, except in large cities.

2. *Cellar.* Minimum height, 7 feet; to be well lighted, cross ventilated, dry, and paved or cemented. Cellar not essential under whole building. Where omitted, building to be set upon masonry piers or walls 2 feet clear from ground; space to be drained, inclosed and ventilated.

3. *Fire Protection.* If over four stories high, to be fireproof throughout.

If over 3 stories high, first floor construction to be fireproof.

If over 2 stories high, a non-fireproof building the area of which exceeds approximately 3,000 square feet. All openings in such walls to be provided with fireproof self-closing doors. Adequate means of egress to be provided to street or yard by an additional flight of stairs, or by fire tower or stair fire escape (fire escape less desirable). All such additional means of egress to be remote from the main stairs and separated therefrom and from other parts of the building by walls of brick, terra cotta, stone or concrete, with fireproof self-closing doors at all openings. Such additional means of egress to be so located that no room shall be more than 40 feet from a means of egress. All main egress doors to swing out.

All stairs and stair halls to be not less than 3 feet wide in the clear and to be inclosed in walls of brick, terra cotta, stone or concrete, with fireproof self-closing doors at all openings. All doors to stair halls to swing into stair hall without obstructing free passage.

Dumb-waiters and elevators will not be accepted in stair inclosure; they should be inclosed in fireproof shafts with fireproof doors, those for dumb-waiters to be self-closing. Inside cellar stairs to be inclosed with walls of brick, terra cotta, stone, or concrete, with self-closing fireproof doors. Stand-pipes with hose reels on each floor to be so located that any point can be reached with 75 feet of hose.

4. *Heating.* Except where connected with a central heating plant, provision to be made for independent heating.

5. *Materials for Exterior.* To be of brick, terra cotta, stone, or concrete, except that wood frame will be accepted for one-story buildings.

6. *Plumbing.* Minimum provision. One water-closet per 10 women, one lavatory per 6 women, one body shower per 10 women, one bathtub per 25 women. Ratio to be increased where there are less than 50 women per floor. Floor and base of toilet rooms waterproof, not of concrete. Dwarf partitions between lavatories to extend at least 6 feet above the floor and have curtains. Sufficient water-closets to be provided in the cellar or basement for the accommodation of engineers, firemen, and laundry workers.

7. *Rooms, Height of.* Height for public rooms, 9 to 12 feet; minimum for bedrooms, 8 feet.

8. *Rooms, Number and Use of.* Each lodger to have separate room. (Cubicles and dwarf partitions will not be accepted.) Rooms for two women not permitted. Each floor to have a general bathroom containing required body showers, tubs and lavatories. Each floor also to have a general toilet room containing required water-closets. Each of these two rooms to have windows opening directly to the outer air, and to be separate but adjoining and communicating. Service closet, with slop sink and space for brooms and pails to be provided on each floor.

First floor to have matron's office so placed as to oversee the single entrance and access to sleeping quarters; to have reception parlors or alcoves (one for every 20 women), or large parlor with furniture arranged for privacy in conversation; also assembly hall with movable partitions and set stage.

Kitchenette, sitting room, and sewing room to be provided on at least alternate room floors. Matron's quarters, physician's room, and infirmary, laundry in which lodgers can wash their clothes, and trunk room to be provided.

Hotel (type 7) also to have dining room and cafeteria, with outside access thereto, with pantry, service rooms, kitchen and toilet facilities for employees. An additional toilet room is to be provided conveniently accessible.

9. *Rooms, Size of.* Single bedrooms to have an area of 70 square feet and be 7 feet wide minimum.

10. *Ventilation.* Bedroom doors preferably to be placed opposite each other, and to have transoms or slat panels.

11. *Windows.* One window in each room to have minimum area of 12 square feet between stop beads.

(To be Concluded.)

War Time Building as Viewed by the Treasury Dept.

IN the course of a debate in the United States Senate on May 9 on a bill for regulating rents in the District of Columbia, Senator Calder of New York, in reply to Senator Gallinger of New Hampshire, alluded to the apparently adverse attitude of the Treasury Department officials toward building.

The excerpts herewith presented from the Congressional Record of May 9 and 17, by courtesy of the Portland Cement Association, should make the country understand that it is not the purpose of the Treasury Department or the War Industries Board or the Federal Reserve Board to discourage building operations where they are necessary.

The Congressional Record, May 9, pp. 6754-6755

MR. GALLINGER: Mr. President, I am glad to see a suggestion in section 18 that the President is given authority—an authority that I think he now has—to distribute this mass of employees that is coming into the District of Columbia into other sections of the country. . . . Baltimore is near at hand, and I apprehend it would welcome a few thousand of them if they went over there. Probably they could provide some place for them to eat and sleep. New York is still on the map and could be reached. . . .

MR. CALDER: Mr. President, will the Senator from New Hampshire yield to me?

MR. GALLINGER: I yield to the Senator.

MR. CALDER: Of course New York City would welcome the Government activities referred to by the Senator from New Hampshire, but I would also tell him that we are having almost as difficult a housing situation in that city as now exists here. At no time in the history of New York have we needed more than at present new buildings for people to live in. We are prevented from having them to some extent because of the attitude of the Treasury Department in advising the banks and mortgage companies against loaning money upon mortgages on real estate. If the Treasury Department changed its attitude, the money could be obtained, new building would be encouraged, and we might then be able to help the housing problem we are facing here.

MR. GALLINGER: I did not suppose that New York ever got more than she could take care of in any respect, and I merely imagined that Mr. Hoover, his clerks, and his outfit could be taken care of in New York. At any rate, I would try the experiment if I had the authority to do it.

The Congressional Record, May 17, pp. 7207-8-9

MR. CALDER: Mr. President, I have received a letter from the Secretary of the Treasury in criticism of a statement I made several days ago in the Senate while the housing bill was under consideration. I send the letter to the desk and ask that it be read.

THE VICE-PRESIDENT: It will be read.

The Secretary read as follows:

THE SECRETARY OF THE TREASURY,
Washington, May 11, 1918.

DEAR SENATOR CALDER: From the proceedings of the Senate of May 9th, 1918, Congressional Record, page 6755, you are quoted as saying:

"At no time in the history of New York have we needed more than at present new buildings for people to live in. We are prevented from having them to some extent because of the attitude of the Treasury Department in advising the banks and mortgage companies against loaning money upon mortgages on real estate. If the Treasury Department changed its attitude, the money could be obtained, new building would be encouraged, and we might then be able to help the housing problem we are facing here."

This statement is so wholly without foundation that I am amazed that you would make it. The Treasury Department has at no time taken any such attitude, nor has it ever advised banks or mortgage companies against loaning money upon mortgages on real estate.

I have advised against the construction of unnecessary buildings during the period of the war, but I have laid emphasis upon unnecessary building. I have stated publicly that—

"Where it is a question of need—be it on account of sanitary conditions or because without such new construction other operations essential at this time for the welfare of the country would suffer—there is no doubt that the work should be undertaken." This applies equally to construction work in cities and towns and in farming districts. (See my letter to the American Lumberman, copy of which is attached.)

In a letter to Mr. Gompers, dated March 15, 1918, in reply to a resolution adopted by the Building Trades Council at San Francisco, I said:

"Building operations which are not required to protect the health or provide for the comfortable needs of our people or to supply facilities necessary for the proper conduct of business essential to the successful prosecution of the war should be postponed."

I enclose a copy of that letter, also.

The attitude of the Treasury Department has been that capital which is needed during the period of the war should not be employed in the construction of unnecessary buildings at this time. But there has never been any suggestion that buildings actually needed for the health and protection of the civil population or for the conduct of essential business of the country should not be constructed during the period of the war. I hope that you will correct your erroneous statement by the inclusion of this letter in the proceedings of the Senate.

Faithfully yours,

W. G. McAdoo.

Hon. William M. Calder,
United States Senate.

Mr. Calder: Mr. President, when I made the statement referred to in the letter of the Secretary of the Treasury just read I believed I was stating the case accurately. Evidently that was the impression also of the American Lumberman and the Building Trades Council of San Francisco when they complained of the action of the Treasury Department on the question of constructing buildings throughout the country.

Early in this year the Secretary of the Treasury or the Department of the Treasury issued a bulletin having to do with the construction of new buildings. Subsequently the Federal Reserve Board issued a statement on the same subject. As I have been deeply interested in this matter, realizing the effect of these two statements, I called upon the Secretary of the Treasury and, in his absence, called upon a member of the Federal Reserve Board. I received the impression there that it was the purpose of the Treasury Department and the Federal Reserve Board to stop, as far as it was within their power to do so, the construction of all new buildings. The bulletins I have referred to evidently had the effect that I stated when I addressed the Senate on the housing problem.

Mr. President, these bulletins undoubtedly reached the banks and mortgage companies of the country, if not directly through the Treasury Department, at least by these institutions reading them in the financial newspapers of the country. I know of my own knowledge that many institutions usually loaning money on real estate mortgages have stopped loaning money on mortgages of that character because of their belief that the Treasury Department proposed discouraging such mortgages.

In connection with the same subject, Mr. President, on Friday of last week a committee representing the building material dealers of Greater New York called upon the War Industries Board and was there advised that it was the purpose of that board in the course of a few days to promulgate an order stopping building construction of every sort in the city of New York. When that committee informed me of this fact, naturally I was dumbfounded at the suggestion, but it was in line with the information I had obtained, and I believed I had obtained accurately, from the position of the Treasury Department.

Subsequently, I called upon Mr. Baruch of the War Industries Board, and was glad to receive the assurance from him that it was not the intention of the board to issue any such drastic order, although one of the men in his office had a few days previously so informed the committee interested in the subject.

In connection with the same matter, I have a telegram from a prominent builder in New York City, which was sent to me on May 14th, in which he says:

New York, May 14, 1918.

Senator Calder,
Senate Office Building, Washington, D. C.:

May we commend you on your excellent presentation yesterday before the War Industries Board on necessity of permitting building operations in New York City? Last October census taken by tenement department showed 1 per cent vacancies in new-law houses. Ex-Commissioner Murphy stated we required 200,000 apartments to meet increased population.

Fred. F. French Co.

Mr. President, I have been much interested in this subject, and very anxious that no steps should be taken here at Washington which would close down the building industry of the country. Senators may recall that when the housing bill was up the other day I pointed out that the building operations this year in the United States would be less

than $300,000,000 as compared with $1,500,000,000 in the year 1916, and that in that year it was less than normal. On the very day that I discussed the housing bill, I addressed a communication to the governor of the Federal Reserve Board, Mr. William P. G. Harding, which I ask to have the Secretary read.

The Secretary read as follows:

May 8, 1918.

Hon. William P. G. Harding,
Governor Federal Reserve Board,
Treasury Department.

My Dear Gov. Harding: I am addressing you as the governor of the Federal Reserve System, and also as a member of the War Finance Corporation, in relation to the building operations of the country. I know that the Federal Reserve Board has given some consideration to this subject and has issued several bulletins dealing with it.

I have been much concerned over the fact that the building operations in the country, aggregating $1,500,000,000 in the year 1916, which was below the average, will this year fall to less than $300,000,000—private construction. The result of this will be that, as already indicated in the larger cities of the country, we are going to be exceedingly short of housing facilities.

The Government is taking up this subject in so far as it applies to people employed directly on Government work, but unless some further relief comes we will face a serious situation next spring. For that reason I would be glad if the Federal Reserve Board and the War Finance Corporation will take under advisement the question of whether it would not be best to encourage the construction of some new buildings, particularly homes. My opinion is that the situation will be difficult in a short time, and we ought to get ready for it.

Inquiry in New York indicates that the banks and mortgage companies are not loaning any money on building operations and very little on real estate mortgages. This situation would change if there was some encouragement from the Federal Reserve Board and the War Finance Corporation.

I would be glad to drop in and talk with you regarding the matter and see if something can not be done to protect for the future.

Sincerely yours, Wm. M. Calder.

Mr. Calder: I ask that a letter addressed to me by Gov. Harding be read.

The Presiding Officer: Without objection, the letter will be read.

The Secretary read as follows:

Federal Reserve Board,
Washington, May 10, 1918.

My Dear Senator: I acknowledge receipt of your letter of the 8th instant, which I brought to the attention of the Federal Reserve Board and which I shall also bring to the attention of the War Finance Corporation at the first meeting of the directors.

I would be glad to have an opportunity at any time convenient to you of discussing with you steps that should be taken to make private building operations possible, and I would suggest that you also discuss this subject with the new Capital Issues Committee, which I presume will take office within the next few days.

Very truly yours,
W. P. G. Harding.

Hon. William M. Calder,
United States Senate, Washington, D. C.

Mr. Calder: Mr. President, I am firmly convinced that with the slightest encouragement on the part of the Government the great building industry of this country can proceed. Within a few days I have received letters from representatives of the brick-making industry on the Hudson River, advising me that they had in their brickyards over 300,000,000 bricks ready to be used, and that there was no place to use them. I have letters from cement manufacturers, from lumbermen, and from numerous builders, stating that the attitude of the Government here in discouraging building operations has completely paralyzed their business throughout the country. They tell me that both men and material are available.

So, Mr. President, I have brought this matter to the attention of the Senate today, first, in compliance with the letter of the Secretary of the Treasury, and then to justify my statement on the floor of the Senate when the housing bill was under consideration. I regret that I in some degree misquoted the attitude of the Department of the Treasury; but perhaps, after all, it is best that I did so, because the matter has been to some extent cleared up. I hope that as a result of what has occurred this morning the country will understand that it is not the purpose of the Treasury Department or of the War Industries Board or of the Federal Reserve Board to discourage building operations where they are necessary.

Professional Ferment

By WM. P. COMSTOCK in Architecture and Building.

THERE are even in this day and hour architects who have business of considerable volume on their boards and many of our contractors can hardly be said to be starving for lack of work. Yet the architects as a body and with them many in the construction industries view the present situation with concern, and well they may.

Building construction methods are in a period of mutation, new species bid fair to be created and the old order is on the wane. Not that this condition is a sudden development—as some may think—for the odor of it has been in the air for many moons. Building conditions, like a huge structure founded in a quagmire, have courted disaster until with a precipitation of an earthquake, they are now suddenly engulfed and the architectural profession with many of its satellites finds itself floundering—and wondering why.

The world war is the immediate cause of this cataclasm and as usual the immediate cause receives the blame though the structure has long been showing dangerous settlement cracks caused by the improper foundations laid down in the past. Good foundations are a necessity in all good building and the architect knows this better than any one else, yet in his very life work has he neglected the preachments he has made to others.

With lofty thoughts and stilted ethics, he has strode along without an appreciation of the progress about him, ever changing, searching, specializing. Business—life—is a continuous revolution. New precepts rule to be superseded by even other newer precepts. The professional practice of architecture has not kept pace and is therefore doomed. It must be reborn from the ashes of the past, even as the legendary phoenix.

Art—architecture is the culmination of all arts—is undying. Architecture is inherent in the human race; the desire for it cannot be destroyed and it will rise with a spirit of victory above all sordidness. This idealism is immortal. It is the soul of the phoenix which shall inspire the new body of a rejuvenated professional practice.

All have not been blind. Some—many even—have seen the light and remodeled their course to meet the modern trend. These are the successful architects and busy builders of today who have met the demands of current development and from them won a deserved return. Chance or accident has not been an element in their progress which has been based on the sound business principle of true service rendered for value received.

The famed architects of antiquity were master builders. They designed freely and wrought wonderfully with the clay on their hands. They lived in the heyday of the artizan and craftsman; they were the leaders who rose above their fellows by the shear might of their gifted prowess. Times have changed.

This is the age of standardization, machine made quantity production, rule by the multitude not by the few and yet our art lives on and reaches ever higher levels of attainment. Let our architects read the signs of the times and rise to new pinnacles based on our modern productiveness.

When our country went to war there was a sudden and enormous demand for construction on a vast scale; the Quartermaster's Corps of the Army had to provide housing for the new armies; extensive additions were necessary to existing manufacturing plants and even greater new factories were built over night as it were; office and executive buildings of great extent were demanded to house the ever extending executive departments of the Government; housing for operatives became a crying need in our great industrial centres; construc-

tion on a vast scale was necessary to meet the needs of our colossal new war machine, to build our ships and supply the materials of war.

To make possible this accomplishment, in all its ramifications vast to the extent of being almost incomprehensible, the organization of our Government Departments was extended many fold; the personnel increased with a rapidity which was marvelous and an organization of professional talent created which today, after a year of war, is perfected and efficient in a remarkable degree. What is the status of this organization? How is it made up? And how was it possible for the Government in its hour of need to immediately get assistance?

It was the trained engineers of the country who became the technical advisers of the Government on planning, design and construction, utilization of existing facilities to the utmost, expansion of them and creation of new utilities. It was our trained engineers already well organized in our great building construction firms into harmonious working units, companies, even regiments, who were ready in the hour of need to do the deed.

Professionally as such our architects have not been a factor in the greatest building emergency the country ever saw. Individually, to many the greatest praise is due. They have donned the uniform, striven at home and fought abroad and given of their best in ability, effort and resourcefulness. But as a profession in the oft vaunted position of autocrats of the building industry they have been wanting. And the reason is not beyond discernment; it is an inheritance from the past; architectural practice has not kept pace with the times.

The call recently issued by The American Institute of Architects to a conference seems like an effort to jump the back platform of the speeding express as far as lending assistance to the Government is concerned. The United States Government now has an organization of building, of industry, of men, the unity of which is now evidenced. The mailed fist of this giant body is extended abroad and its effectiveness causes confusion in the councils of our enemies.

Belated is the effort of the institute; a year ago organized effort would have been of timely assistance to our Government, but others have done the work and now our industries are federated, our construction forces coordinated in competent hands. New construction proceeds with precision and expedition and the enlargement of our cantonments to house our increasing armies will be accomplished with even greater efficiency than was displayed in their original construction.

The need of federation in the building industry as a war time need has been met. Why not face the truth squarely and hold a conference to reorganize the out worn system of professional practice?

The after-war period in the building industry will be a time of great enterprise and expansion. In this the architect should play a prominent part but his days of autocracy are over and his success will depend on his ability to cooperate, not to dictate. Now when the architect secures a job he calls on the foundation builder to figure his footings, he depends on the steel contractor to design the structural members, he depends on the plumbing contractor to draw up his plumbing layout, he expects the electrical contractor—but why go on? —and when the building is finished he zealously, often belligerently demands exclusive credit for its entire design and construction.

The day for this is past—and why? The architect has been losing business. Others who build better, more efficiently and more economically under the name of architectural or engineering contracting firms have taken the work from him and they work on the principle of cooperation, not autocracy.

A Few Requirements to be Met in Planning a Farm House

By MAX EUGENE COOK*

FIRST and foremost, the plan for the farm house must be flexible to permit of future additions and improvements; a great many of which can be made by the farmer himself. It is only through intelligent planning at the outset that such additions and improvements may be added from time to time with an ultimate result that is successful, both from an architectural as well as a utilitarian standpoint.

The plan best adapted to the individual farmer's requirements cannot be found; it must be made. This requires a trained mind; one that is not only schooled in the peculiar requirements of the farm house, but with the farmer's interests at heart as well, and a desire to co-operate with him in evolving a result that will fulfill his special conditions and express, as a home should, the individuality of himself and family.

Nothing should induce the farmer to select a plan that is ready-made. It may appear to suit his pocketbook and be otherwise satisfactory, but in the end is certain to prove inadequate in many ways, as well as uneconomical. Ready-made plans, if they have been carefully worked out, are valuable only for their suggestions. Otherwise they are a detriment.

The selection of a farm house from one of the widely advertised "Plan Books," issued for the purpose of increasing sales of materials, is a more serious mistake. Possibly those who are responsible for the issuance of some of these publications are trying honestly to give the farmer what he needs, but the fact remains that most of the plans are but unintelligently designed and poorly planned suburban houses. There is a marked difference between a suburban house and one suitable for the farm.

A house must not only look well but must first be practical and livable, particularly on the farm where it is to be a real home, and the center of business activities as well. The well designed and convenient farm house costs no more than an architectural misfortune and in fact, ultimately, costs less beyond estimate. If capital is limited in the beginning, the house should be planned so that a portion of it may be built as a nucleus of what is to follow. The farmer may then add to it as he is able, and as required, always having in mind the ultimate possession of a worthy home.

A suitable farm house is the safest of investments, the returns on which can be measured and experienced, not alone in dollars and cents, but as a social investment, and as insurance against discouragement, an outlook of dreariness and a life of drudgery. Surely the farmer is entitled to the conveniences in the home equal in comfort to those of the city dweller. His children should be able to choose their vocation without weighing the relative attractions between city and country home life.

The farm house problem, although intensely interesting, is a difficult one when handled conscientiously. The intelligent laying out of the farmstead as a whole is equally engrossing. One should not be considered without the other. Some of the controlling factors in the laying out of the farmstead are: Accessibility to fields and roads; economical distribution of roads and tillable land; elevation, drainage and water supply; general convenience; prevailing winds, with house free from dusty roads and barn yard odors; proper sunlight exposures in all rooms and buildings; direction

*Farmstead Engineer for the California State Land Settlement Board, Durham, California. Mr. Cook was formerly associated with Mr. Houghton Sawyer, architect, in the Shreve building, San Francisco.

of the town, school and community centers; and existence of healthful conditions and pleasing outlook.

In brief form, the following include a very few of the more important considerations that demand attention in the planning of the farm house:

The kitchen is the center of activities. "Three square meals," being the order of the day on a farm, necessitates the most careful consideration to kitchen convenience. It is a mistaken belief by some, that a model kitchen can be evolved and standardized like a piece of machinery. Here, more than elsewhere, individual requirements must be given the most careful attention. The possibilities for attainment in space and labor saving arrangement of plan have yet to be commonly understood.

The kitchen, in particular, should not be used as a thoroughfare to other rooms.

Dining porch and dining room should be equally accessible for serving from the kitchen.

Larger food storage spaces, convenient to the kitchen, are required for the country house than for city or suburban dwellings.

Kitchen screen porches must have practical value and not be mere "pocket handkerchiefs" in size.

The kitchen should have an outlook commanding a view of the main road, driveway and farm buildings.

Light, ventilation and freedom from excessive summer heat are essential.

Dining room or porch should be accessible to men without passing through the kitchen, or other main rooms of the house.

The various porches should be so designed as to permit of putting them to more than one use in case of emergency. (Either as sleeping porches, dining porches, living porches, or, by the addition of sash, as separate rooms.)

The bath room should be accessible to all rooms without going through bed rooms and from the exterior without entering the house proper.

It is a mistake to sacrifice great convenience for the sake of centralizing plumbing fixtures. The extra initial cost of separating bath room and kitchen is generally much exaggerated.

Ready made plans are merely suggestive. They are made to meet imaginary conditions. The natural controlling factors peculiar to any given building site, and the requirements of the farmer and his family, vary in each individual case and are anything but imaginary.

* * *

Hardness and Strength of Stone

THE hardness of a rock, or its resistance to abrasion, depends directly on the hardness and texture of its component minerals. Most of the constituents of granite are as hard or harder than steel, and the rock is therefore difficult to tool. Granites in which the proportion of quartz is large are harder than those in which it is small, for quartz is their hardest essential constituent, writes Oliver Bowles in a recent bulletin issued by the government on the structural and ornamental stones of Minnesota. Limestone consists of minerals that can be scratched easily with a knife and it is consequently worked with comparative ease. Sandstone may be worked with ease or difficulty, according to the nature of its cementing material and its state of aggregation. Siliceous sandstones or quartzites are the most difficult to cut.

The term "texture," as applied to a rock, means the size, uniformity and

arrangement of its constituent mineral grains. In rubble, riprap or crushed stone, texture is of little moment, but in stone of ornamental grades it is of vital importance. Uniformity in size of grain and in distribution of minerals is demanded in monumental and the best structural stone. Fossiliferous limestones are subject to differential weathering, which destroys their originally uniform surfaces.

Rocks are of many colors, and the choice of color for a building stone depends on individual taste or prevailing fashion. For monumental stone there is a demand for rock of practically all colors. For building stone, red, gray, brown or white rocks are widely employed, and dark-gray or black rocks are used but little. The buff or yellow colors of many limestones and sandstones, and the red or pink shades of many granites are due to the presence of minute grains of iron oxides. Surface stains are serious blemishes and are generally due to the presence of small crystals of pyrite, marcasite or siderite, which oxidize by weathering, or to soluble iron salts in the quarry water.

Most building stones, when unweathered, are sufficiently strong for all ordinary structural uses. Bridge piers and supporting columns in large buildings must sustain great pressures, but even in such structures the strength of ordinary stone far exceeds the requirements of safety. It is, however, generally conceded that rock disintegrates and tends to weaken more readily when under severe stress, and a factor of safety of 20 is usually demanded—that is, the stone must be able to resist a crushing stress 20 times as great as that to which it will be subject when placed in a wall. For ordinary uses a stone that will sustain a crushing strength of 5,000 pounds to the square inch is considered satisfactory. Most fresh granites will sustain a pressure of 20,000 to 35,000 pounds to the square inch, and many limestones will sustain a pressure nearly as great. Sandstones differ widely in strength, but their probable strength can be judged from the state of aggregation of their constituent minerals. Crushing tests are not particularly useful except those made on stone that is to be employed for some purpose that demands exceptionally great strength. Tests made to show transverse strength—that is, the strength required to sustain a load applied at the middle of a bar of stone that is supported at the ends—is of more importance, for it shows the adaptability of the stone to use as window caps, door caps and the like. The number of broken caps that may be observed in buildings indicates that sufficient care has not been taken in selecting stone for such uses.—Stone.

UNITED STATES POSTOFFICE, ALAMEDA, CALIFORNIA
Oscar Wenderoth, Supervising Architect

Some Practical Points in the Design and Construction of Partitions*

By H. L. BARRACLOUGH

HAVING been asked to write something on the use of partitions, I had almost thought their common use and infinite variety would scarcely have required anyone to ask further information on the question, a matter of some difficulty owing to the simplicity of construction.

Like many other things, the war has brought partitions into an almost endless number of uses, one of which has been for the building of huts and houses. Though this may be new to some, the writer has been concerned in the building of schools and sanitoriums with plaster slabs, cement rendered outside, and those places stand today as good as when erected.

When partition slabs were first used they had to meet some stern opposition from those always present in a community who oppose anything new. Even today one meets with people who are opposed to innovations. However, we may thank the evils of war for dispelling some objections concerning partitions.

Simple as it may seem, the erection of partition slabs, as experience has proved, should be entrusted only to the hands of men used to this particular class of work. A badly built-up job is sure to develop cracks in unthought-of places, the blame very often being fixed on the manufacturer of the particular partition slabs. This long-suffering individual very often has little means of replying to the criticisms, where the slabs alone are supplied by him.

There are several kinds of partition slabs manufactured and on the markets—breeze, pumice, plaster and clay—each of which has its special claims.

Plaster, until recently, has been the most common in use, and has many advantages over breeze slabs. Solid plaster slabs are light, easily fixed, with little or no waste in erection. When up, they form a solid wall, hygienic in all ways, as every possible lodgment for dirt and vermin is effectually closed after the walls have been plastered out, and are fire- and sound-resisting, provided the work has been executed by skilled labor, which goes largely to ease the question of after-cracks.

My opinion is that hollow plaster slabs, although lighter, have some objectionable features, the compressional strength of the slab having been somewhat destroyed through the apertures; and further, if spiking is resorted to for fixing, very often the spikes crack the slabs when being driven in, and generally weaken the whole wall.

In fixing plaster partition slabs, it is essential that the suction should be destroyed by applying a thin cement wash, and that they should be well bedded in plaster in preference to spiking.

It is preferable that all slabs, used for partition work, should be tongued and grooved horizontally and vertically, and, in fixing, the grooves should be placed upwards and the joints broken, as in brick work, and the vertical joints carefully grouted in with plaster, both where they join up to the door frames or brick walls, and where they butt against each other. Where a slab has to be cut it is advisable to form a groove by scooping a piece out.

*Paper read before the Concrete Institute, London, March 21, 1918.

Plaster slabs have been successfully used for external works fixed on wood framings and faced with tiles, but this is an expensive form of work, and if not carried out by experienced labor the tiles are liable to come off.

Seven years ago, two-inch plaster slabs were used for internal and external walls of a school in Northumberland. The slabs were fixed to wood framing on outside, rendered over surface with cement, mortar floated to an even surface and rough cast with a mixture of slag and pea gravel, one-inch internal slabs nailed to framing floated and skimmed with washed haired lime and putty, and finished with putty and plaster throughout, a dado of 3 feet 6 inches being formed with portland cement back, and finished with Keene's cement face, trowelled smooth. It has proved a very satisfactory construction as well as cheap.

A well-known firm has recently introduced a plaster slab with a special face to receive cement rendering for external work, and they claim that it will withstand the weather for twenty years without being re-rendered. These have been used for external works on several jobs in the Midlands, and would appear to be eminently suitable for a cheap-system cottage or bungalow building. This system could be used in conjunction with light reinforced concrete piers and beams or wood framing, and has the advantage of being a very rapid construction. Doors and windows can practically be fixed in any position, as the openings can easily be cut, after the wall is up, without much danger of damaging other parts.

The foundation need only be 9 inches depth of good concrete under the wall, weathered on the outside, doing away with the necessity of any damp course.

The pumice slab is a very light form of construction, convenient to handle, and is manufactured from pumice and volcanic sand (imported from Italy) mixed with portland cement. These slabs form a rigid construction when up. Nails can readily be driven into them and take a good hold, doing away with the necessity of plugging for fixing skirtings or picture rails.

The hollow terra cotta partition tile is well known to many, and can be obtained in different sizes from several firms, and has the advantage of being easily handled. It can be obtained with a keyed or smooth face, and is being used just now extensively for exterior work. It is easily built up, the horizontal joints being bedded with cement, and the vertical joints grouted up, and seems to be quite effective in withstanding the weather, but it has only come into prominent use for this purpose recently, owing to the present shortage of other materials, and it remains to be proved what effect time will have on it. I am, however, strongly of the opinion that there are several points in its favor for this purpose, being cheaper than a brick wall of the same thickness, resists the damp better and insures a more even temperature, but does not lend itself to nailing. Where it is necessary to fix skirtings and rails, provision should be made for same at the time of erection by carefully inserting plugs in the joints. Should this not be done at the time of erection, and it is found necessary to fix electric fittings or hook rails, the joints should be cut out, and a plug built in, as any attempt to drive a nail into the tile is generally a failure, besides being liable to break the face of the whole tile.

Those of us who have had to do with partitions know only too well that they mostly have the annoying habit of showing cracks which more

often than not go right through. These cracks may develop from either of the following causes:

The cracks generally occur just under the ceiling or near walls and door frames, or at top corners of door frames. The cracks at the tops or by the walls may be caused by variation of temperature, causing expansion or contraction, or through the supports deflecting or settling. Cracks also are generally to be found on top stories of buildings with large flat roofs, owing to the expansion of the flat as well as the partition, and up to the present I have not seen any successful method of stopping this occurring with a built-up partition, for even when cut and carefully filled in, the cracks will readily appear again.

The cracks on doors are particularly noticeable when the jambs project a few inches above the frame, and this is caused by the wood frame swelling, through absorbing the moisture from the partition whilst it is being erected. These can generally be stopped up successfully if cut out and filled in, after the partition has had time to dry out, and will not appear again, provided the door frames are fixed rigidly enough to prevent the partition from being shaken when the door is shut quickly. The best remedy, however, is to prevent this by stopping the door jambs off flush and carrying the partition over in one slab. This method is now recognized by most practical fixers as the best, and, with few exceptions, is carried out wherever possible.

The position of a partition is too often left to be settled after the floor and beams are all in, and then it is placed anywhere, whether the weight is supported by a main beam or only by the floor, and more often than not gets placed on the floor, away from the main beam, which may only be calculated to carry a load of 100 pounds per foot super; whereas many 3-inch partitions, when plastered both sides, weigh 18 pounds per foot super, and 10 feet is quite an ordinary height for such a partition, therefore one foot run would weigh 180 pounds. The heaviest articles of furniture in domestic buildings are generally placed against the partition, and in an office it is quite an ordinary occurrence to find a heavy safe one side and a tier of shelves filled with books and papers on the other. Taking the total weight of the safe at 15 cwts., placed in the center of the bearing, and the bookcase at 2 cwts. per foot run, we find, if a 3-inch partition, 12 feet wide by 10 feet high, happens to be placed on the floor, we get the following load per foot super in that particular place:

3-in. partition—18 lbs. per ft. sup. x 12 ft. wide x 10 ft. high = a distributed load of 2,160 lbs.
1 safe = a distributed load of 30 cwt. =.....3,360 lbs.
1 tier of shelves 10 ft. wide at 2 cwt. per ft. run = 20 cwt. =.....2,240 lbs.

Giving a total load of .....7,760 lbs.

Taking the width of floor occupied as 3 ft. x 12 ft. = 36 ft. sup.

Therefore, 7,760 pounds divided by 36 equals 215.5 pounds per foot sup. on this particular portion of the floor, which is more than double what the floor weight and main beams were calculated to carry, and except for the large safety factor required by the authorities there would be more than mere cracks appearing. The writer is strongly of the opinion that the position of all partitions wherever possible should be settled at the time of planning, and proper beams arranged to carry them, and when this cannot be done it is advisable wherever possible to have partitions cast in situ and reinforced with small steel rods, forming a beam from wall to wall. This method has been carried out by me and has always proved most satisfactory, and helps very considerably to tie the wall and distribute its load more evenly, and costs little more than a built-up partition.

Enormous Consumption of Steel for War Purposes

THE government has tightened its grip on the steel supply of the country in accord with an agreement reached between the war industries board and the American Iron and Steel Institute.

The direct and indirect requirements of the American government and the allies will be met first. If there is any surplus it will be equitably distributed among the non-war industries.

Mr. Bernard M. Baruch, chairman of the war industries board, at the conclusion of an all-day secret session of that body, made public resolutions adopted by the joint committee of the steel institute and the board, defining the steel policy, according to Washington dispatches. Figures were not made public but a resolution adopted by the committee declared that the government and allies' steel needs necessitates strict conservation of the available supply and expansion of existing resources and development of new channels of supply.

The iron and steel institute agrees that no pig-iron or steel will be delivered except on a priority certificate issued by the war industries board, and then for no purposes other than those embraced in the preference list of the priorities division of the board.

The board announced there will be enough steel for all purposes, but conservation must be observed. The steel mills have now on their books, it is stated, unfilled orders for steel approximating 17,000,000 tons, which is a little more than half the entire output for last year.

* * *

America's finished steel production has been about 34,000,000 tons annually. For war purposes, both direct and indirect, our Government and its Allies have already ordered 20,000,000 tons, or enough to take the entire steel output for a period of nearly eight months. However, it will prove impracticable to divert all the steel output into war channels.

Six weeks ago Mr. J. Leonard Replogle, Federal steel director, told the steel producers that they had seriously underestimated the Government's steel requirements and they must make up their minds that practically all their output would have to go to the Government during the rest of this year. He stated that steel for projectiles alone would total 5,000,000 tons this year or 15 per cent of the entire steel output!

The steel producers were amazed at the Government's avowed steel program, but Mr. Replogle told them that he was not at liberty to mention certain plans that involved an additional tonnage of enormous magnitude.

The steel producers have pledged themselves to give priority to Government orders, but it is obvious that in the absence of such a pledge our Government would have followed the British precedent and would have commandeered the entire steel output.

Judge Gary of the U. S. Steel Corporation stated that his company would increase its capacity, if necessary, but "that requires a good deal of time." It is evident that increased output of existing plants offers one of the most hopeful sources of relief from the steel famine. Another source of relief will be the greater use of lumber and concrete—a matter that has not yet received adequate consideration.

* * *

Big Warehouse and Dock Project

Mr. Frederick H. Meyer, San Francisco architect, with offices in the Bankers Investment building, has prepared preliminary plans for a big warehouse and concrete dock project on the bay at San Mateo. The plan will be carried out on lines similar to the Bush terminal docks in New York City and covers an area of one square mile. The project is being promoted by Mr. Sayre, with the Hotaling Estate Co., Merchants Exchange building, San Francisco.

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The Architect and Ship Building

The building world is taking keen interest in ship construction, which has overshadowed other branches of building, for the time being, at least. This interest is not confined to the layman or to the naval architect and engineer. It is being shared by architects and engineers generally, many of whom are considering seriously going into this now very attractive field. Some training, of course, will be necessary, but for the man already equipped with technical knowledge of draftsmanship, and for the engineer, too, the additional schooling necessary should not prove a barrier for those seeking this new field of endeavor. The names of several architects have already been mentioned in the press as having taken to ship planning and we know of one prominent designer of skyscrapers whose plans for a certain type of water craft are now under serious consideration at Washington.

It is because of the part which the architect and engineer is taking in the movement to strengthen our seafaring equipment that this magazine is devoting space this month, and will continue to feature more or less in future issues, the more important achievements of the world's greatest present-day industry—shipbuilding.

Hopeful Outlook for Building

The government has at last made clear that it does not desire and has never desired to put a stop to necessary building construction. The individual or corporation confronted with a building problem need only answer one question: Is the building essential?

Secretary McAdoo has stated in unequivocal terms in a letter to Senator Calder, which forms a part of the Senate records, that "there has never been any suggestion that buildings actually needed for the health and protection of the civil population, or for the conduct of essential business of the country, should not be constructed during the period of the war." A great num-

ber of contemplated necessary building operations have been postponed because of an erroneous interpretation of the government's wishes. These should now go ahead.

Mr. McAdoo's statement was in answer to Senator Calder, who had asserted that building operations would not exceed $300,000,000 for 1918, as compared with $1,500,000,000 for 1916, a below normal year, and one of the principal causes for this great decrease was due to the supposed attitude of the government in placing a ban on building construction. Not only were private owners holding up work, but, according to Senator Calder, banks and mortgage companies were not lending money on building operations, and very little on real estate mortgages.

There has been every reason for the average person to believe that the attitude of the government was against building now. "Economy-at-all-costs" advocates have spread the "no building" idea to the point where to build during the war would amount almost to disloyalty.

A committee of the Indiana Limestone Quarrymen's Association recently waited on Mr. McAdoo and made clear to him that his stand on the building proposition had been misunderstood. It was suggested that a new, clean-cut statement from him to the effect that the government meant to pursue a constructive policy would serve to dispel the fog of misapprehension. The secretary replied to the suggestion that in view of previous statements to the public on the subject, and the apparent misunderstanding which has arisen through them, further utterance would only serve to thicken the fog.

Mr. McAdoo's letter to Senator Calder now makes it clear that the government does not regard all private building as non-essential. So at last we are down to a common sense basis. Any one confronted with a building problem will have no trouble in determining whether or no to carry out the operation at this time.

Necessary Building

A MISUNDERSTANDING seems to have spread a few months ago that government officials were attempting to discourage all forms of building. Secretary McAdoo, as reported in full elsewhere in this issue, has gone to considerable pains to explain that "there has never been any suggestion that buildings actually needed for the health and protection of the civil population, or for the conduct of essential business of the country, should not be constructed during the period of the war."

Tremendous sums of money are being used in the war—not wasted, but well spent in establishing a just and permanent peace for the future. These expenditures must be met, and the sound, economic way is to increase production and decrease consumption. The amount that output exceeds outgo is what is saved for war work. Unnecessary expenditures in any direction are wasteful, because the tremendous expense of fighting must be balanced by rigid economies at home.

In the building field any construction which does not contribute to the success of our arms, to the greater productivity of industry or to the health and well-being of our people should be discouraged. This fact hardly needs be stated, as economic conditions prevent the undertaking of such operations. With the non-essentials eliminated, the extraordinary magnitude of necessary building appears more clearly.

What, then, are some of the necessary building operations? First are the direct government requirements—the thousands of structures necessary for the success of our fighting forces—the buildings of all kinds at the various training camps, the storehouses for munitions and supplies, the buildings abroad, government-owned industries, shipyards, hospitals, etc. The greatest efforts that the building industry can put forth seem small compared to the importance of this undertaking.

Then comes the building requirements of industries manufacturing war materials and supplies. The enormous increase in production calls for larger plants and more buildings. Overcrowded transportation facilities make necessary more warehouses to store raw materials and finished products.

Readjustment of manufacturing has caused shifting of labor to new locations, and has produced housing problems in many places. This condition must be met in a big way, as efficiency in production is only possible where the worker is surrounded with proper home conditions. Untold numbers of houses must be built quickly in many parts of the country—and they should be well built, substantial and attractive, not temporary shacks which undermine the self-respect of the occupant.

With the whole nation on a war basis, new buildings are often required in unexpected places. Office buildings, hotels and

stores may be absolutely essential, though at first thought it might seem that such buildings could be postponed until after the war. The erection of a theatre would be entirely proper in a new community requiring some means of recreation.

Any necessary building adds wealth to the nation. A building investment is permanent and depreciates little in years, while most purchases are totally consumed in a short time. The large volume of necessary building will tax the resources of the construction world. Every branch of it should organize to meet the new conditions with energy and enthusiasm.—Modern Building.

Architect Building Apartments

Mr. A. C. Swartz, architect in the Rowell building, Fresno, is building a two-story frame apartment house, 40x105, on R street, near Mariposa, Fresno. It will be equipped with wall beds, gas heaters and hardwood floors.

Washington State Chapter, A. I. A.

On Sunday, July 14th, the members of Washington State Chapter held an enjoyable picnic and outing, the guests of Mr. Daniel R. Huntington, president, at his summer camp at West Landing, Lake Washington.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. Z. C. Hubbell, an architect of Spokane, is in Washington, D. C., where he was summoned by the shipping board to explain a patent form invented in Spokane that is designed to increase the output of concrete ships. The form can be easily taken down after a ship is finished and set up for another vessel of greater or less tonnage. This avoids the delay and expense of rebuilding the forms.

Mr. Max Thelan, president of the Railroad Commission of California, has tendered his resignation to accept a position as surveyor of all contracts for the purchase of materials and supplies by the War Department. Mr. Thelan has been in Washington for several weeks representing the National Association of Railway and Utility Commissioners in aiding the Federal Government in the war emergency.

Mr. A. A. M. Russell, for some time in the drafting department of the California State Harbor Commission, San Francisco, is to be placed in charge of the inspection department of all concrete ships built on the Pacific Coast. Mr. Russell is now in the East, but will make his headquarters in San Francisco in the near future.

Another former employee of the engineering department of the State Harbor Commission, Mr. Harry Squires, has been called East to the position of construction engineer of the concrete ship division of the Emergency Fleet Corporation.

Mr. John E. Kunst, formerly an architect of Los Angeles, now located at Jerome, Ariz., won a prize offered by W. H. Archdeacon of that city, for the best patriotic song written by a Verde district composer. The judges took into consideration patriotic spirit, originality, versification and rythm.

Mr. Harold O. Sexsmith, well known architect of Seattle and formerly professor of architecture at the University of Washington, has been made a captain in the 18th U. S. Engineers, American Expeditionary Forces. He left Seattle as a sergeant.

Mr. Ernest Curtiss, junior member of the firm of Binder & Curtiss, architects of San Jose, is at Camp Kearney, where he expects to be commissioned to a position in the Construction Division of the Army.

Architects in War Work at Home

That the architect is doing his bit in war work at home is evident from the following list:

FREDERICK H. MEYER, San Francisco—Designed office building, hospital and power house for Union Iron Works and complete plant for the Pacific Coast Shipbuilding Company.

J. R. MILLER, San Francisco—Designed office building and other structures for Bethlehem Steel Co., Ltd.

JOHN REID, JR., San Francisco—Designed shop building for Union Iron Works, Alameda.

J. J. DONOVAN, Oakland—Designed buildings for Hanlon Shipbuilding Co.

LLOYD RALLY, San Francisco—Designed office building for Union Construction Company.

GEO. W. KELHAM, San Francisco—Planning housing facilities for Mare Island shipworkers.

W. H. RATCLIFF, JR., Berkeley—Planning housing facilities for shipworkers in Alameda.

GEO. A. APPLEGARTH, San Francisco—Designing housing facilities for shipworkers at Bay Point.

Adopt Hospital Plans

Working plans from the office of Mr. R. A. Herold, architect of Sacramento, calling for the expenditure of $160,402.49 for the construction of a tubercular hospital at Weimar, Placer county, by eleven Northern California counties, have been adopted by all the counties interested. Of the amount quoted, $149,992.50 goes into actual building construction. The plans provide for ten sleeping porches and thirteen cottages in addition to administration building, service station, power house, nurses' home, superintendent's cottage and other structures.

H. G. Corwin Bankrupt

Mr. Harley G. Corwin, a Los Angeles architect, at one time associated with Engineer W. W. Breite in San Francisco, has filed a petition in bankruptcy, listing his debts at $5,499.37 and assets at $50, comprising wearing apparel, which are claimed exempt. The principal debts are on notes and judgments in San Francisco and Los Angeles courts. Mr. Corwin was for a number of years architect for the Maine Building and Investment Company.

Compton School Building

Messrs. Allison & Allison, 1405 Hibernian building, Los Angeles, have been commissioned to prepare plans for new manual arts and gymnasium buildings for Compton Union High School district. The buildings will be of either hollow tile or brick construction and will be equipped with modern woodworking machinery, motors and other appliances. The buildings will cost about $35,000.

Fireproof Residence

Mr. Myron Hunt, 1017 Hibernian building, Los Angeles, is preparing preliminary studies for a large fireproof residence to be erected at Montecito for Mrs. Mary Stewart. The house will probably be of hollow tile construction with clay tile roof. It will not, however, be erected until after the close of the war. For the present, Mrs. Stewart will reside in a frame dwelling now on the site.

Addition to Armour Building

Plans have been completed by Messrs. Ward & Blohme, architects in the Alaska Commercial building, San Francisco, and a contract has been let to Messrs. Barrett & Hilp for a two-story Class C addition to the Armour building at Battery and Union streets, San Francisco, the property of Mr. W. T. Sesson. The addition will make the building five stories.

St. Francis Wood Residences

Messrs. Willis Polk & Company have completed plans for an attractive frame residence to be built in St. Francis Wood for Dr. Wm. Boericke. The house is estimated to cost $12,000.

Messrs. Ward & Blohme are preparing plans for a $6,500 home to be built in the same tract for Mrs. E. A. Eason.

Bungalow Court, Los Angeles

Mr. Percy Eisen, 380 Wilcox building, Los Angeles, is preparing plans for six four-room bungalows to be erected at Harbor City for Mr. T. Hickman.

More About Mare Island Housing Plans

A recent dispatch from Washington, D. C., confirmed previous announcements in this magazine of the selection of Mr. George W. Kelham of San Francisco as architect of a large number of cottages for workingmen to be erected near Mare Island Navy Yard, Vallejo. Plans for these houses are now very nearly completed and contracts for their erection will be let shortly. Mr. Stephen E. Kieffer, 57 Post street, San Francisco, is to act as engineer and Mr. P. R. Jones, in Mr. Kelham's office, will officiate as town planner.

Peach Growers to Build

The California Peach Growers' Association of Fresno is building or will build a group of factories and warehouses at Turlock, Sanger, Atwater, Kingsburg, Selma, Lemoore and other towns, from plans by Messrs. Glass & Butner, architects, of Fresno.

Mr. Butner, by the way, is doing service with Uncle Sam somewhere in France and in his absence the firm's business is being looked after by Mr. Glass. The electrical plans for the different factories are being made by Mr. Chas. T. Phillips of San Francisco.

Paso Robles Hotel

Plans are being prepared by Mr. Chester H. Miller, architect in the Call-Post building, San Francisco, for a three-story Class C store and hotel building for Mr. Hiram Taylor of Paso Robles. The hostelry will contain 32 rooms and will cost approximately $45,000. Mr. Miller has also completed plans for a factory building in East Oakland for the H. Robinson Hardware Company of Gilroy. The building will be 150x183.

Addition to Factory

Messrs. Weeks & Day, Phelan building, San Francisco, have prepared plans for a two-story reinforced concrete addition to the one-story concrete factory of the John Bollman plant, San Francisco. The improvements will cost close to $100,000.

The same architects are preparing plans for a club house, swimming pool, etc., to be built at Red Bluff, being a gift to the town by Mr. Edward F. Kraft.

$35,000 Concrete Residence

Plans have been completed by Mr. Arthur Bugbee, architect in the Rialto building, San Francisco, for a handsome $35,000 reinforced concrete residence for Mr. E. M. Wilson, president of the Pacific Coast Steel Company. The house will be built on Guerrero street, near Twenty-fifth, San Francisco.

Farmstead Engineering

Mr. Max E. Cook, formerly with Mr. Houghton Sawyer, architect in the Shreve building, San Francisco, is now practicing as a farmstead engineer, with headquarters at Durham, Butte county. Settlement lands in Butte county, seven miles southeast of Chico and one mile east of Durham, comprising about 3,520 acres, have been subdivided into fifty farms and on each farm will be constructed appropriate building for industrial and farm labor housing. Mr. Cook would like to receive catalogues and printed literature on farm equipment, stable sanitation, and various building materials that will be required in the construction of these buildings.

"The Best Published"

The firm of Johnson & Holloway, architects, State Life building, Indianapolis, Ind., has been succeeded by Mr. Charles S. Holloway. Mr. Jesse T. Johnson has joined the United States Army Ordnance Department and Mr. Holloway has taken over the practice of the firm.

For the time being Mr. Holloway is at 1324 Monroe street, Washington, D. C.

Mr. Holloway has long been a reader of The Architect and Engineer. In a letter recently received, renewing his subscription, he says:

"Yours is the best all-around architectural magazine published."

Half Million in Contracts for Lange & Bergstrom

Messrs. Lange & Bergstrom, the well-known San Francisco contractors, have recently been awarded the contract at $390,870 for the erection of Hangars No. 1 and No. 2, carpenter shop, machine shop, one store house and landings and piers for hangars at the naval air station on North Island, San Diego. The same firm has also received the contract at $283,948 for the erection of commandant's residence, student officers' quarters, and bachelor officers' quarters and a barracks for 400 men at the naval air station. These large awards are a fine compliment to the high standing of this firm in the building world.

Big Transport Contract Placed

The Bethlehem Shipbuilding Corporation, Ltd. (Alameda shop), has been awarded a contract to build twenty large transports for the United States Government. They will cost $5,000,000 apiece and will be the largest vessels yet turned out by a Pacific Coast plant.

Designing Boat Hulls.

Mr. R. Spangenberg, formerly a draftsman in the office of Mr. W. H. Toepke, architect of San Francisco, is now with the Hanlon Shipbuilding Company, designing hulls.

Chapter Members in the Service

The following Pacific Coast architects, members of the San Francisco, Southern California, Washington and Portland Chapters, A. I. A., are doing service for Uncle Sam either on the battle front or in training camps:

San Francisco

Harris C. Allen	James T. Narbett
E. P. Antonovich	Ernest L. Norberg
John A. Baur	Sidney B. Newsom
Franklin T. Georgeson	Walter D. Reed
John Davis Hatch	W. O. Raiguel
B. S. Hirschfeld	

Los Angeles

Edward C. Taylor	H. A. Jackson
Robert M. Taylor	Kenneth C. Albright
Ellis Taylor	Emmet G. Martin
Dwight Wallace	Chas. A. Wall
Arthur Evans	Edw. H. Cline
C. P. Hill	Sam W. Williams
Eugene Weston	John Hasemeir
Ross Montgomery	Chas. Schweissinger
John T. Vawter	James Hanenstein
Joseph Weston	Karl D. Schwenker
Robert Lockwood	B. A. Freeman
Archie Zimmerman	Carl Sjoberg
Jos. Fiel	James Connell
P. H. Frohman	William E. Murphy

Seattle

Chas. H. Alden	Herbert Lindhoust
Wm. J. Bayne	Harold Sexsmith
Walter Bogart	W. M. Somervell
Joseph S. Cote	

Portland

Mr. Lorings	L. C. Rosenberg
J. J. Burling	Artie Marshall
Russell Collins	Earl Heitschmidt
J. Andre Fouilhoux	John McGuire
Harold Doty	Peter Jensen
Edwin Merrill	Howard Hall
John Stanton	H. W. Ward
Warren Hathaway	Fred A. Fritsch
George Otten	Eyler Brown
Chester Truchelt	Walter Church
Jay Keller	Dell Hinson
T. Turner	Harvey Madden
C. Merrian	O. Lyllenberg
Lloyd Dittrich	Glenn Stanton
J. Tourtellotte	

A Fine Edition

The Architect and Engineer,
Monadnock Building,
San Francisco, Cal.

Gentlemen: We acknowledge copy of the special number of The Architect and Engineer containing Mr. Cheney's work. We congratulate you on the very fine edition and thank you for the copy. Mention will be made of it in a forthcoming issue of the Fortnightly.

Sincerely yours,

HOMER HAVERMALE,
Secretary University of California Alumni Association, Berkeley.

San Francisco Planning to Build Large Tonnage

The Marine Journal is authority for the statement that San Francisco shipyards expect to produce 14 per cent of the entire estimated United States shipbuilding output during 1918. The yards now are building two vessels a week, averaging 8,000 tons each. The construction is distributed as follows: Union Iron Works, 18; Moore Yard, 28; Hanlon Yard, 8; Pacific Coast, 10; Union Construction, 10; Shaw-Batcher Shipbuilding Co., 18.

Passing of a Distinguished Architect

MR. FRANK MILES DAY, an architect of international reputation, died in June at his home in Philadelphia, Pa., following a short illness. The degree of doctor of science in architecture was to have been conferred upon him the week of his death by the University of Pennsylvania. He received the degree of M. A. from Yale University in 1916.

If the firm of which Mr. Frank Miles Day was the head had accomplished nothing else of note but the very effective dormitory group at Princeton University, this one achievement would in itself have sufficed to stamp him an artist of unusual originality, refinement and distinction, comments the editor of the Builder's Guide. When, in addition to this beautiful expression of his skill, one takes into account Mr. Day's work as the designer of such notable buildings as the Art Club, Horticultural Hall, the Crozer building, the amphitheater for the Medico-Chirurgical Hospital, the gymnasium of the University of Pennsylvania and the improvements in and about Franklin Field, residential halls at Cornell University, dormitories and dining halls at Princeton University and a large group of buildings now being constructed at Wellesley College, it is apparent that Mr. Day embodied in a most attractive personality a gift for delicacy of conception and artistry of execution representative of all that was best and most enduring in American architecture.

* * *

Mr. Frank Miles Day was born in Philadelphia on the 5th day of April, 1861, the son of Charles and Anna R. Miles Day. He was educated at the University of Pennsylvania, and after graduation in 1883 took a course at the South Kensington (London) School of Art and was admitted as a student at the Royal Academy. A considerable period of travel and sketching in picturesque highways and byways of Europe, in the course of which Mr. Day was enabled to become acquainted at first hand with the finest architecture in the Old World, antedated Mr. Day's return to the United States in 1886, where subsequently he entered actively upon the practice of his profession. In 1892 Mr. Day was joined by his brother, Mr. H. Kent Day, the firm being Frank Miles Day & Brother, and in 1911 by Mr. Charles Z. Klauder, the firm name changing to Day Brothers & Klauder. Since the retirement of Mr. H. Kent Day, the firm has undergone a necessary modification, being known now simply as Day & Klauder.

Mr. Day always took the keenest and most sympathetic interest in movements for the advancement of the arts, giving liberally of his time and means to the support of organizations pledged to the promotion of the higher canons of taste. He was a Fellow of the American Institute of Architects, which representative body he served as a director, as vice-president, and, in 1906 and 1907, as president. He was a trustee of the American Academy in Rome; an associate of the National Academy of Design; an honorary corresponding member of the Royal Institute of British Architects, and a corresponding member of the Imperial Society of Russian Architects. Mr. Day was also a member of the American Philosophical Society, the Academy of Natural Sciences, the National Institute of Arts and Letters, the University Club of Philadelphia, and the Century Association of New York.

He was chairman of the standing committee on competitions of the American Institute of Architects for several years, and acted as professional adviser in a number of important competitions held throughout the United States; also serving upon juries of award in competition matters, and was in steady and consistent demand as a consulting architect.

Mr. Day served on the jury of award for the United States Post Office at San Francisco; the Public Library at St. Louis; the New York Post Office, and was a member of the jury for the new Court House in New York City, a ten million dollar edifice.

He was the consulting architect for the New Haven, Conn., Hospital, and a member of the Advisory Board in charge of the rebuilding of the Johns Hopkins University.

The Concrete Ship in the August Issue

The Architect and Engineer has asked Mr. H. J. Brunnier, a San Francisco structural engineer, whom the Government has made assistant chief engineer of the reinforced concrete ship department of the Emergency Fleet Corporation, to write of the concrete boat and the plans of Uncle Sam to make it a big factor in defeating the Hun. Mr. Brunnier's answer will be published in the August number of this magazine. In this same issue "Concrete Boat Construction" will be discussed in detail with up-to-the-minute articles on "The Construction of Reinforced Concrete Ships," "Durability of Reinforced Concrete Vessels," "Making Concrete Vessels Immune from Steel Corrosion," "Some Interesting Data About the Concrete Ship 'Faith,'" and "English Views of the Reinforced Concrete Ship." All these articles will be plentifully illustrated, and the issue should prove one of exceptional interest. The number will also contain illustrations of the recent architectural work of Mr. B. J. S. Cahill.

The Housing Problem

Editor The Architect & Engineer of California.

Enclosed please find a set of resolutions passed by the Oregon Chapter of the American Institute of Architects at its meeting of June 29th.

The Housing Committee, appointed by the President, to take care of any requests for professional advice on housing matters ,is made up of Messrs. Alfred Smith, Folger Johnson and Ellis F. Lawrence.

Any comments you may make in regard to this offer of the Chapter will naturally be appreciated. We feel that the crisis which Portland is facing is far more serious than most of our people realize.

We are in hopes of co-operating in every way with the programme for housing which the Shipping Board and the Department of Housing and Transportation Committee of the Department of Labor is contemplating.

Yours truly,
ELLIS F. LAWRENCE,
Chairman of Housing Committee,
Oregon Chapter, A. I. A.

Whereas, The solution of the housing problem, as applied to the war workers, has been recognized by all the waring nations as a vital part of their war program; and

Whereas, The United States, appreciating the need of efficient and contented workmen to speed up production of war supplies and ships, has appropriated $110,000,000.00 for the purpose of building quarters for war workers; and

Whereas, Statistics prove that Portland is confronted with a serious shortage of desirable quarters for workers in the shipyards and other war activities, thereby jeopardizing the fulfillment of her duties to the nation in this crisis; and

Whereas, The Oregon Chapter of the American Institute of Architects is, from the experience of its members, keenly aware of the difficulties existing to solve this serious matter, in the way of increased building costs, in securing skilled labor and materials; and

Whereas, The Oregon Chapter of the American Institute of Architects is desirous of doing all in its power to aid the Government at this critical time; and, therefore, be it

Resolved, That the Oregon Chapter of the American Institute of Architects hereby offers its services in an advisory capacity, without cost, during the war, to all Portland organizations interested in the housing problem; and be it further

Resolved, That the housing committee of the Oregon Chapter of the American Institute of Architects be hereby instructed to gather and present all information at its disposal to the public and to any Portland organization asking for professional advice on housing matters. Should actual maps, layouts and plans be needed at the minimum cost for the success of any approved housing venture, then the above committee is hereby instructed to report back to the Chapter, which will attempt to secure such maps, layouts and plans at net cost of production; and be it further

Resolved, That this offer holds good to all other communities in the State of Oregon and to environs of Portland

For the Oregon Chapter of the American Institute of Architects:

By JOS. JACOBBERGER, President,
and ALFRED H. SMITH, Secretary.

Burlingame Baptist Church

Mr. Norman F. Marsh, 211 Broadway Central building, Los Angeles, has been commissioned to prepare plans and specifications for a new Baptist church edifice to be erected at Burlingame. It will contain an auditorium to seat 200 people, Sunday-school department to accommodate 150, accessory rooms, etc. The building will probably be of frame and plaster construction and is to cost $15,000.

Three-Story Loft Building

Mr. Smith O'Brien, architect in the Bankers Investment building, San Francisco, has completed plans for a three-story and basement Class C loft building to be erected on California street, near Front, San Francisco, for Messrs. J. H. and C. A. Meyer. Building is to be occupied by a wholesale coffee house and will cost approximately $30,000.

Reed & Corlett Busy

Messrs. Reed & Corlett, Oakland architects, are busy on plans for a $45,000 apartment house at Vallejo for Mr. A. W. Stremmel, and a group of buildings for Jessie E. Watson at 4th and Castro streets, Oakland, including a garage, stable, wagon shed and office building. The structures will be occupied by the Austin Freight & Transportation Company.

Stockton Apartment House

Mr. Ralph P. Morrell, architect in the Odd Fellows building, Stockton, has prepared plans for a two-story frame apartment house, 50x100, to be built on West Fremont street, Stockton, for Mrs. Stella Trainor. Mr. Morrell has also made plans for extensive alterations to the country residence of Mr. J. V. Barre, near Woodbridge.

Contract for Three Buildings

Messrs. Davis & Heller, Modesto contractors, have been awarded a contract for $25,000 to build a two-story brick business block, also the contract for a two-story store building and lodge rooms to cost $20,000 and a dry kiln costing $35,000, all for the West Side Lumber Company of Tuolumne.

San Jose Cannery

Messrs. Wallace and Bush of San Jose have prepared plans and will build on percentage a reinforced concrete cannery and packing house, 60x180 feet, at Fourth and Margaret streets, San Jose, for O. A. Harlan. About $20,000 will be expended on the improvements.

Don't Quit Advertising Now

When the factory is oversold the big boss is apt to say: "Let's cut out the advertising, we don't want any more orders now—can't handle them."

But the vice-president of one of the largest manufacturing plants in this country—Mr. Charls of the American Rolling Mills Co.—takes a different view of the matter and sets forth some cogent reasons why advertising should be continued.

Read what Mr. Charls has to say on this vital question and remember that the American Rolling Mills Co. is practicing what it preaches:

All oversold conditions present three dangerous temptations: First, to cheapen the product; second, to reduce sales cost by reducing the sales force; third, to lessen or discontinue advertising.

Yielding to one or all is a questionable business procedure for the average institution, because: Cheapening the product breeds dissatisfaction; reducing the sales force cripples the organization for the reactions which business cycles prove are inevitable.

Therefore, ceasing to advertise when it is hard to get the goods to fill the orders is obviously radically opposed to the only method by which it can function properly.

Lessening or discontinuing advertising sacrifices previous effort, expenditures and prestige, and provides no anchor to the windward when adverse winds are blowing. However, there are exceptions to these rules. Some products have been cheapened, selling prices raised, and the sales increased.

Some concerns have sent their sales forces on a vacation, or let them out entirely, and are still doing a big business. But in most cases the advertising is continued or increased.

Why should any wise business man yield to the first two temptations, yet sternly refuse to risk the third?

The company that continues to advertise when it is difficult to fill orders will reflect progressive management, which implies quality products and, more important, sincere consideration for the men producing such products.

We can, and many of us do, insure the lives of those employees while they remain in our employ, but what will that avail them if they are unable to continue their jobs or earn a satisfactory wage when conditions change?

Continued advertising when unable to make delivery holds the public to its first decision to use the advertised product.

If such product cannot be obtained, the public must resort to another product; but, in doing so, such other product remains simply a substitute for the advertised product so long as the public knows their original choice is still being produced, and why they cannot obtain it promptly.

If the advertising of the original product is discontinued the substitute product is accepted and the original product dismissed from the public's mind. The previous effort is lost, and the task of reforming public opinion in favor of the original product is magnified to such an extent that such procedure is manifestly uneconomical.

The distributor of the original product remains an ally and continues his effort to hold the public to such product if the advertising is continued. The discontinuance of advertising under such circumstances disheartens the distributor, and the secondary benefit—namely, the word-of-mouth advertising—is also lost.

If it requires two or three years to obtain real worth-while results from a general advertising campaign, selected advertising seeds, planted in this season of plenty, undoubtedly must yield a crop when it shall be needed greatly.

Can an Architect Reject Lumber Furnished for Concrete Forms?

That an architect in charge of the construction of a building has a right to reject unfit material furnished by a sub-contractor for the construction of concrete forms is the decision in a recent Washington case, says an exchange.

It was contended in this case that there was no lien for the value of lumber used in making concrete forms because the lumber did not become a part of the finished structure, and it was provided in the contract that the concrete forms were to be constructed and removed, and thus the concrete forms should be classified just as tools and appliances to facilitate work are classified.

The court refused to adopt this view, however, saying:

"The use of concrete in modern building operations has become so common that we may almost take judicial notice of the fact that buildings are no longer erected without the use of it, and that form lumber when once used is stained, warped, wired and coated with cement so that it is no longer a commercial commodity and is to be classed as waste. We see no more reason for rejecting form lumber as a subject of lien than we would have for refusing a lien for false work erected to sustain an arch or floor."

Mr. Cahill's Number Postponed

In consequence of the arrival of Mr. Schwab and the big doings in naval architecture, we have devoted the July number of The Architect and Engineer to the marine branch of architecture and engineering. To allow us to do this important subject justice, Mr. B. J. S. Cahill has kindly consented to the postponement of his particular issue until August. Mr. Cahill will then show some of his work and tell of his professional experiences in an article entitled "Adventurings in the Monumental."

New Hotel for Woodland

The three-story brick store and hotel building at Woodland, owned by the Porter Estate and known as the Byrne Hotel, is to be extensively overhauled and modernized, from plans now being prepared by Mr. William H. Weeks. Thirty rooms will be added and the building will have a new stucco front, new plumbing, wiring, etc. About $75,000 will be expended.

Palo Alto Residence

Mr. Warren Skillings, architect of San Jose, has prepared plans for a two-story Colonial residence to be built at Palo Alto for Mr. H. J. Moule. The house is estimated to cost $8,500.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

California Woman Takes Husband's Place Bossing Road Job

WOMAN'S infinite capacity has been put to all sorts of tests by the world war. In Europe women have taken up work which no one ever dreamed they were fitted for; in the United States we have yet to accustom our vision to women employed as motormen, engineers and at other occupations involving heavy labor.

About the last thing one would suppose a woman could fit herself for is the operation of a heavy motor truck and road-building machinery. But it occurred to a member of the National League for Women's Service and the White Company to demonstrate that such work was not beyond the realm of possibility.

Incidents forming a basis for the demonstration were suggested by the experience of a contractor who, after securing a contract for road construction, was drafted. His experience and his good wife's timely aid gave the idea for a moving picture scenario which the League will screen throughout the country as an example of what American women can do to aid their country and release men for the military service. The synopsis is as follows:

F. H. Davis, a young contractor living in Fresno county, California, secures a $59,000 road contract. He shows his wife the contract and they are in high feather over the success of his bid. He starts his job with enthusiasm. A few days later, when Hazel, his wife, takes his lunch to him, she also takes a letter—a draft notice summoning him to camp.

Davis is determined to serve his country but is distressed by the prospect of being forced to abandon his road contract. The perplexity of his problem is suddenly lifted by his wife's inspiration. She ventures the suggestion that she can learn to operate the big White five-ton truck and road machinery and carry the contract to a successful finish.

Hazel dons her husband's overalls and, after a few days' coaching, she proves her ability to handle the machinery and boss the job. Davis leaves for war.

Hazel's crew is at first inclined to loaf on the job and take advantage of the "woman boss." But she does not countenance slackers.

While her husband is being turned into a first-class fighting man, Hazel goes on steadily with the work. She receives the first payment on the contract—a check for $10,000. She goes to camp to see her husband. She drives up in her car and is halted by a sentry. She discovers her husband sitting in a nearby tent and hails him. Davis runs out and embraces her, then inspects the car and endorses the contract check. She gives him a ride in the new car and bids him good-bye.

The last scene shows Davis in a parade of troops about to entrain for France and Hazel appears in a nearby window bravely waving him adieu.—The Roadmaker.

Curtailment of Clay Products

The recent order of the United States Fuel Administration curtailing the output of manufacturers of clay products will not influence the building situation to as great an extent as was at first anticipated. The output of these various plants has been ordered reduced anywhere from 25 to 50 per cent of the average annual production for the past three years. That doesn't mean anywhere near a 25 or 50 per cent reduction of the average normal production, for the production in the three years from January 1, 1915, to January 1, 1917, in many of these industries was at high pressure. Following are the industries affected:

Sewer pipe, drain tile and flue linings—75 per cent.

Common building brick—50 per cent.

Terra cotta—50 per cent.

Floor and wall tile—50 per cent.

Paving brick or block—50 per cent.

Sanitary ware (burned clay wares for plumbing installation)—50 per cent.

Stoneware—85 per cent.

Face brick—50 per cent.

Roofing tile—50 per cent.

Enameled sanitary ware (enameled iron ware used in plumbing installations)—50 per cent.

Hollow tile (all forms of fireproofing or hollow building blocks except silo tile)—75 per cent.

Ornamental Iron Contract

The Sartorius Company, Fifteenth and Utah streets, San Francisco, has been awarded the ornamental iron contract by Constructing Engineers MacDonald & Kahn, in connection with the new plant of the California Raisin Growers' Association, Fresno.

Credit Purchases by Contractors*

CREDIT purchases by contractors are usually limited to current accounts—that is, payment on the 10th of the following month. Business conditions as well as government influence tend at this time to make such terms about the maximum credit allowed. In fact, it is oftentimes necessary, or at least desirable, to purchase materials on C. O. D. basis. A return to normal conditions will no doubt eliminate the cash on delivery business; but there should be no extension of the present maximum credit term. If terms of payment are made too easy, speculation would be invited and irresponsible bidders would occupy a considerable portion of the field of building operations. We believe there is no community that has not suffered from the fly-by-night contractors. Their activities are not detrimental to legitimate contractors only; but the building business and the building owners likewise suffer. A legitimate contractor's stock is (1) his experience and ability as a builder, (2) his reputation as a conscientious builder, and (3) his financial responsibility. This does not limit the field to established or wealthy builders, but offers opportunities to every one who is willing to locate more or less permanently at one place and meet the exacting requirements of our profession. The beginner can demonstrate in the fulfillment of a smaller contract his ability to do larger work; and experience comes with lapses of time and volume of work. The reputation of any builder is the result of his own efforts. A builder who is looking to the future expects to put more into any job than a strict interpretation of his contract requires; and that excess furnishes him with his stock of reputation. Financial responsibility in its turn is not entirely a matter of dollars and cents. If a builder has all the money required for handling the largest jobs, he needs no other financial responsibility; but the average contractor must build up a financial responsibility that is the sum of his present money worth and the moral risk that he represents. Some men can carry on fairly large undertakings with relatively small capital because their financial judgment has been proved and they are regarded as negligible moral risks.

Any contractor who has provided himself fairly liberally with the three things that make up his stock in trade, is a real asset to the community in which he lives. He is a taxpayer, often to large amounts. He is assessed for industrial insurance and first aid. He is a public-spirited citizen carrying weight in the community in which he lives.

If conditions are such that a man may engage for a limited time in the building industry without possession of these three things that make up our stock (and too liberal credits tend to make this possible), he may speculate on his ability to take the cream from the industry at a given place until he is found out; and then he can move to new and perhaps greener pastures. Such a man by sheer effrontery may make his victims believe he possesses the requisite experience and ability. He need not put into his job anything more than he is compelled to put there, because he is not investing in reputation. And easy credits and unwise lien laws furnish him the needed financial responsibility, or, rather, substitute for his financial responsibility that of the building owner. This hurts the building owners, as we well know. Such builders never give a hundred cents of building value for a dollar collected. Most of them obtain money on false pretenses, often within the meaning of the criminal laws. They generally disappear between two suns, just after having collected a payment on their several jobs, and leave the building owners and bonding companies as souvenirs a flock of liens representing the bills he thoughtfully overlooked. The material men get lawsuits instead of remittances, and often find that the mortgage was filed just before they began to make deliveries. The owner expects his building on June 1 of one year and gets it about June 1 of the following year and with it a depleted bank account that causes him for many moons to damn all contractors indiscriminately. The community always loses in such cases because such a man pays no taxes, gives nothing to charity, takes no interest in civic affairs, and adds nothing to the general good. The legitimate contractors lose not only the fair profits that they should have had from the work that such a time took from them, but also they lose indirectly. The material man must add a percentage of profits large enough to cover his credit losses and collection expenses and the bonding companies make good their losses in the same way. In the last analysis, the decent, bill-paying, tax-paying contractors make up the deficits left by the fly-by-nights. Let us keep credit transactions on a strictly commercial basis and reduce the wastage that we are called upon to replace.

*A paper by O. L. Wiiett, read before the Northwest Master Builders' Association, Seattle, Wash.

$50,000 Loft Building

Mr. William Knowles, Hearst building, San Francisco, has been commissioned to prepare plans for a three-story Class C store and loft building for the Hind Estate Company and which will be erected on Market street, east of Seventh, San Francisco.

Proposed Expenditures in Various States for Road Construction This Year

Reports from the various states indicate a contemplated expenditure this year of approximately $295,000,000 for highway construction and maintenance. This sum includes state and federal aid funds and money raised by counties and road districts. The following table shows the amounts for each state:

Alabama	$2,500,000
Arizona	3,000,000
Arkansas	15,000,000
California	12,000,000
Colorado	3,600,000
Connecticut	5,200,000
Delaware	1,000,000
Florida	2,750,000
Georgia	4,330,000
Idaho	800,000
Illinois	17,000,000
Indiana	17,400,000
Iowa	15,500,000
Kansas	10,500,000
Kentucky	4,500,000
Louisiana	5,300,000
Maine	3,200,000
Maryland	2,700,000
Massachusetts	15,600,000
Michigan	2,000,000
Minnesota	11,500,000
Mississippi	3,500,000
Missouri	4,000,000
Montana	3,000,000
Nebraska	1,300,000
Nevada	500,000
New Hampshire	500,000
New Jersey	8,000,000
New Mexico	1,600,000
New York	8,500,000
North Carolina	2,500,000
North Dakota	3,500,000
Ohio	7,200,000
Oklahoma	6,000,000
Oregon	5,650,000
Pennsylvania	11,000,000
Rhode Island	600,000
South Carolina	1,500,000
South Dakota	300,000
Tennessee	10,000,000
Texas	25,000,000
Utah	1,100,000
Vermont	700,000
Virginia	3,600,000
Washington	7,200,000
West Virginia	14,000,000
Wisconsin	10,000,000
Wyoming	800,000
Total	$294,900,000

Are You Going or Coming?

Under the heading of "Are You Going or Coming?" what are described as "a few pointed questions" are addressed to American business men by Mr. W. M. Hart, advertising manager of Photoplay, the matter occupying a full page in the Chicago Tribune.

Some of Mr. Hart's points are:

Did you think that you could embalm your business for the period of the war and then resuscitate it at will? It can't be done.

How long do you think your goodwill is good for, anyway, if left to itself—even in normal times?

You cannot starve your business and make it win. But you can cut out the frills and give it nourishment!

The United States is not going to quit—why should you?

Purification of Swimming Pool Water by Liquid Chlorine

The modern method of keeping a swimming pool in a sanitary condition, according to a paper presented before the Southwestern Water Works Association by Mr. C. A. Jennings, is to pump from the pool water at a rate sufficient to empty the pool in 18 to 24 hours. This water is forced through a pressure filter to clarify it and then it is sterilized with liquid chlorine and returned to the pool. In this manner a definite amount of polluted water is withdrawn from the pool and the same quantity of pure water returned to the pool continuously. No heating of the water is necessary in this purification process as the water remains at the temperature of the pool.

Concrete Rice Mill

Engineers A. H. Markwart and Maurice C. Couchot, associated, prepared the plans for a five-story reinforced concrete mill and a two-story mill construction warehouse now being erected in West Sacramento for the California State Rice Milling Company.

Sleeping Room on a Tower

Sleeping porches are a popular feature of residences in California and some people repose on the roofs of houses under the starlit heavens, but a sleeping tower, such as has been built by Mr. L. Gregory at Winters, California, is not likely to become a fad, even in progressive California. Mr. Gregory suffered from insomnia, especially during the hot spring and summer nights, common in Yolo county, and he decided to imitate the birds and sleep high, according to Mr. Robert H. Moulton, writing for the Architectural Record. "A bungalow in a tree was his first idea," says Mr. Moulton, "but as there were no trees in his yard large enough to hold such a structure, he decided to build a steel tower with a screened bedroom at the top. The result is a sleeping room on a forty-foot tower, which not only gives the occupant of the room the benefit of every breeze that blows, but also eliminates the ground vapors that ascend from the earth on damp evenings. In addition, the room makes a fine reading place during the day; besides affording an excellent view of the surrounding country.

"The bedroom is about ten feet square and contains a single bed and a couple of chairs. Access to it is gained by means of a small electrically operated elevator, which enters through a trap door in the floor of the chamber. The trap door prevents the entrance of flies and mosquitoes when the elevator is at the ground.

"After continued experiment Mr. Gregory found that the temperature averages ten degrees cooler at the top of the tower than down on the ground."

Opposes One-Story School of Many Rooms

As a result of a close study of newly-erected school buildings at Minneapolis, the building committee of the Educational council, of which Miss Maria R. Porcher is chairman, recommended to the board of education that no one-story school house of more than 12 rooms be erected, on the ground that a principal cannot hold administrative control over a building covering so much territory. The new Longfellow school, a one-story building, will have 24 rooms when finished.

The committee also opposed the building of kindergarten rooms off gymnasiums and the inserting of large windows in hallways looking into kindergarten rooms, as both teachers and pupils object to this "publicity."

The committee asked that cloak rooms be so arranged as to leave available blackboard space in front of the room, and school room floors be deadened and doors conveniently placed.

Invents Forms for Concrete Ships

Mr. S. Giletti of San Francisco, for many years well known as a concrete and artificial stone contractor, has recently gone to Washington with an introduction from the local shipping board to the head of the Emergency Shipping Board in the Capital City.

Mr. Giletti has brought out five or six patents relating to the construction of concrete ships. He has given particular attention to the construction of permanent movable sectional forms and to the use of compressed air for accelerating the pouring of concrete. Mr. Giletti claims that by this process he can place all the concrete needed in a 5000-ton ship, when the forms are in position, in 24 consecutive hours.

The rapid placing of concrete under pressure is a great advance on the slow gravity system. If it can be successfully managed it is clear that it will turn out to be a three-fold advantage. First, it will save time. Second, it will secure a closer aggregate, and third, it will obviate all seams or joints—the hull, in other words, will be absolutely monolithic from stem to stern and from keel to scuppers.

Architects and Advertising

Even the ultra-conservative architect is beginning to talk of advertising his profession, and the American Institute of Architects, at its recent convention, decided that to advertise in a legitimate way was no longer unprofessional. On this subject Mr. Argyle E. Robinson, A. I. A., recently said:

Why should the commercial world enjoy the privileges of advertising and not the professional world? The very nature of an architect's work makes him a semi-business man and this fact would seem to warrant judicious advertising. It seems to me that the architect who sits in his office and waits for clients has about as much show of getting them as a fisherman who sits on the pier without lines in the water.

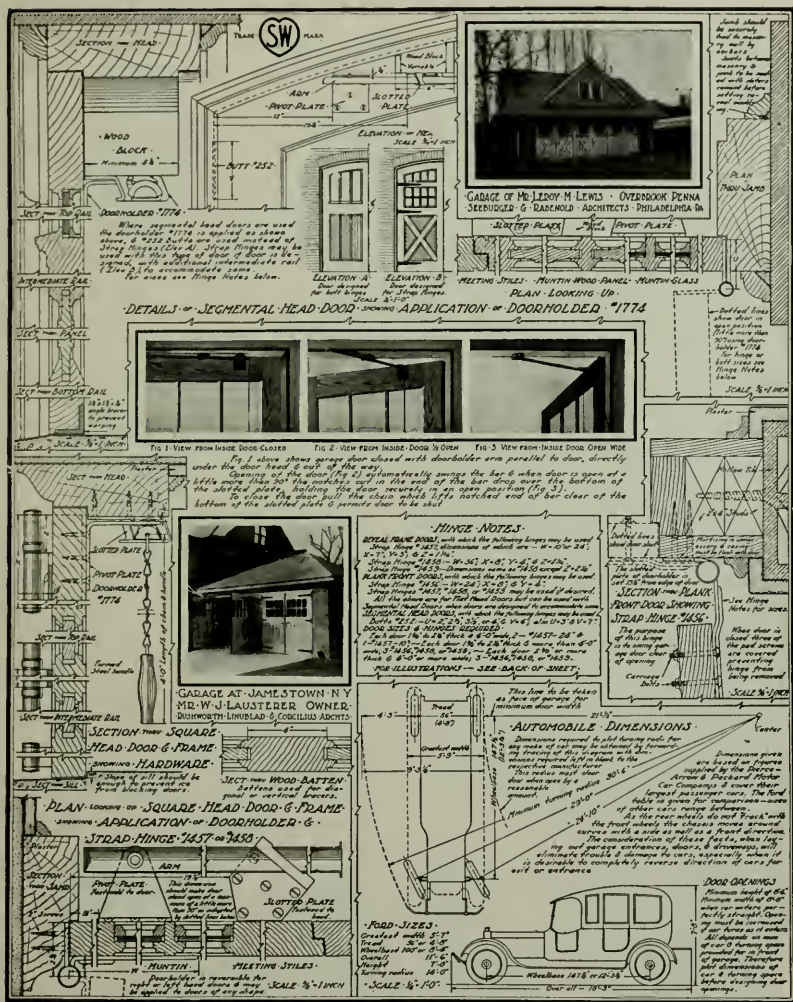
Public indifference is not an exclusive enemy of the architect; it is faced by everyone who tries to lead the public in all walks of life. The surest sign that something can be done about it is the fact that architects are aroused to the difficulties they are facing and this will stimulate effort which will find a solution. Perhaps if we provided the money, our societies might, among other novel enterprises, advertise for us.

Electrical Contracts

Two electrical contracts of some magnitude have recently been awarded in San Francisco, one to the Newbery Electric Company for wiring the new plant of the American Can Company in Oakland, for $33,000, and the other to George A. Sittman for the electrical features at the Government Exposition, Eighth and Market streets, San Francisco.

Emeryville School Plans Finished

Mr. Frederick Soderberg, First National Bank building, Oakland, has plans complete for Emeryville's new $50,000 brick school house.


DETAILS OF SEGMENTAL HEAD DOOR SHOWING APPLICATION OF DOOR HOLDER "1774
GARAGE OF MR. LEROY M. LEWIS · OVERBROOK PENNA
SEE BUDGET NO. G · RADCLIFF & RADCLIFF · ARCHITECTS · PHILADELPHIA PA
Fig. 1 · VIEW FROM INSIDE DOOR CLOSED
Fig. 2 · VIEW FROM INSIDE DOOR ½ OPEN
Fig. 3 · VIEW FROM INSIDE DOOR OPEN WIDE
HINGE NOTES
GARAGE AT JAMESTOWN N Y
MR. W. J. LAUSTERER OWNER
DUNWORTH, LINDLAR & COCILIUS ARCHTS
SECTION SHOWING SQUARE HEAD DOOR & FRAME SHOWING HARDWARE
PLAN SHOWING SQUARE HEAD DOOR & FRAME SHOWING APPLICATION OF DOOR HOLDER & STRAP HINGE "1457 OR "1458
AUTOMOBILE DIMENSIONS
DOOR OPENINGS
FOLD SIZES
SCALE ½" = 1'-0"
SCALE ¾" = 1'-0"

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NEW BRITAIN, CONN., U. S. A.

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A War Time Economy for Architects and Engineers

A war time economy and convenience that has proven a great aid to many of the leading architects and engineers is the Photostat method of copying drawings, blueprints, tracings, etc. The elimination of hand work in the enlarging or reducing of the scale of any drawing, and the rapidity with which results can be obtained, in comparison with reproducing by other methods, has proven a boon to builders in these days of rush orders for war purposes.

Photostat copies are fac-simile photographic reproductions of any printed, written or drawn sheet, and every line, mark or character appears as in the original. The process is not dependent upon human hands to finish the work, and the possibility of error is entirely eliminated. Blueprints may be copied by the Photostat process and exact copies made without the use of a tracing.

This method has been adopted by many of the governmental departments, who find the many uses of the service indispensable in the carrying on of the big problems that have to be met and solved from day to day. Large factories have private Photostat plants as a part of the regular system of doing their work. Shipbuilding plants find the service a great convenience and an economy in many ways. With the scarcity of expert draftsmen, occasioned by the war, the Photostat service has been a blessing to many engineering departments, doing the work formerly done by tracers and by the use of the pantograph.

The scale of any drawing may be enlarged or reduced with accurate proportions maintained in the Photostat copy. This one feature alone is of immense value to many engineers and draftsmen where adopted. Large blueprints and drawings may be reduced to any convenient size for inclusion in a report or folder of standard size, for office filing or to conform to the size of legal pages or to accompany a contract. Architects desiring a standard size for all of their sheets of their various jobs can have them made so by the Photostat service. The enlargement of the scale of any map or drawing for tracing purposes is one of the many uses adapted for the Photostat way of making prints. Sets of prints temporarily in the possession of an engineer or architect may be copied in a few hours' time, and, if desired, without the originals leaving the sight or possession of their owner or custodian.

The largest Photostat equipment on the Pacific Coast is that operated by the Standard Photoprint Service, 235 Montgomery street, San Francisco, who have a machine for the production of prints up to 18x22 inches. Any smaller size can be produced if desired.

Canadian Women Make Millwork

Nattily arrayed in khaki overalls and dustproof caps, eight bright-faced young women are now engaged in the woodworking plant of a large lumber company at Edmonton, Alta. Though their engagement is of comparatively recent date, they appeared quite at home amid the whirring machines and continual din arising from their operation, when visited by a representative of the Christian Science Monitor.

These workers are engaged in various departments of the plant. Two are operating mortising machines; a third is assisting with a sash and door machine; others are working in the cut-off, planing and matching departments. The work is of a routine nature, but demands constant and careful attention, and, in some departments, involves considerable outlay of strength. The machines are "set" by a machinist, making mistakes impossible.

The workers started in the capacity of beginners, and while taking the places formerly occupied by men, are not in the accepted sense of the word supplanting men.

The employment of women workers in the plant was part of a carefully thought-out policy of the company with a view to providing for the future as well as for present needs. In this, as in any other industrial establishment, it is necessary to have a certain percentage of permaneney among the workers. The demands of war have made heavy inroads on the man-power available for industrial purposes, which, it is anticipated, will be felt even more as time goes on. The gradual employment of women in such capacity as they can work, when through natural causes vacancies occur, is believed to be the solution of the problem of securing a more permanent staff. The women workers do exactly the same work men would do in the same position, and are afforded the same opportunity for promotion. They are not engaged temporarily but with a view to being retained if they work out satisfactorily, and desire to remain.

From 8 o'clock in the morning until 6 in the evening they work, with an hour at noon for lunch and 15 minutes in the afternoon for rest and refreshments. A room, well lighted and simply furnished, has been set aside for their use as a rest and dining room, and the firm intends, if the experiment be successful, to make further arrangements for the comfort and well-being of its employees, according to lines tried out by

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other firms, as far as conditions will permit.

The experiment is still in the initial stages, but the firm feels satisfied with progress up to the present time. The girls are quite enthusiastic over their work, and express themselves as well satisfied.

There are still other positions in the factory which women could handle nicely, such as the crating of sash, puttying windows and so forth. These may be filled by women workers from time to time as vacancies occur.

Manufacturing Ventilator Cowls

The San Francisco Metal Stamping Works, Mr. Theophile Lahaye, proprietor, 2269 Folsom street, San Francisco, is becoming a factor in the shipbuilding industry in San Francisco. This company is specializing in ventilator cowls of the die-pressed galvanized type, especially manufactured to meet the United States Government standards. Mr. Lahaye takes considerable pride in the fact that his shop turned out the cowls used on the concrete ship "Faith," which boat has received world-wide recognition and is being featured on the screen in moving picture houses throughout the United States. The San Francisco Metal Stamping Works is now busy on orders for ventilator cowls for the Emergency Fleet Corporation and for the St. Helens Shipbuilding Company, Fife building, San Francisco.

O'Shaughnessy to Survey Skagit Site

Whether or not Seattle shall be authorized to issue bonds in the sum of $5,500,000 to construct the first unit of the proposed Skagit river power plant, there will be no lack of definite knowledge upon which to base whatever action is taken. The mayor and city council, in their desire to have the matter thoroughly understood, have enlisted the services of Mr. M. M. O'Shaughnessy, city engineer of San Francisco, who will make a survey of the Skagit river site as well as electric power supply and needs in and around Seattle.

Another Big Shipbuilding Plant

A contract has been let to the Aberthaw Construction Company of Boston to erect a ten-way shipbuilding plant on the Alameda water front for the Bethlehem Shipbuilding Corporation, Ltd., from plans by Engineers Monk and Johnson of Philadelphia. The plant is to cost $20,000,000 and must be completed in eight months.

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List of Ships Under Construction or About to Be Built in Bay Cities Shipyards

Bethlehem Shipbuilding Corporation, 20th and Illinois streets, San Francisco (fourteen freighters). Mr. A. H. Williams, Purchasing Agent.

Hanlon Drydock & Shipbuilding Company, Oakland (six steel freighters). Mr. D. C. Young, Purchasing Agent.

Moore Shipbuilding Company, Oakland (twenty-one freighters and six tankers). Mr. M. G. Waites, Purchasing Agent.

Crowley Launch & Tugboat Company, San Francisco (six 28-foot launches, four 45-foot launches, one covered barge). Mr. John L. Crowley, Purchasing Agent.

Main Iron Works, 163 Main street, San Francisco (engines for five twin-screw steamers; boilers for twenty vessels; machinery for two steamers for C. A. Smith Lumber Company, and for Messrs. Sudden & Christiansen.

Pacific Coast Shipbuilding Company, First National Bank building, San Francisco (ten 9500-ton d. w. steamers). Mr. J. P. Baloun, at the works at Bay Point, Purchasing Agent.

Schaw-Batcher Company, South San Francisco (eight single-screw freighters and ten single-screw freighters). Mr. G. B. Merritt, Purchasing Agent.

San Francisco Shipbuilding Company, Redwood City (four 7500-ton d. w. freighters, reinforced concrete).

W. F. Stone Shipbuilding Company, Oakland (four steamers). Mr. Frank Stone, Purchasing Agent.

Union Construction Company, Atlas building, San Francisco (ten steel ships of 9400 tons capacity each). Mr. Chas. P. Froding, Purchasing Agent.

United States Metal Products Company, 555 Tenth street, San Francisco (140 36-foot metallic life boats and 500 metallic life buoys). Mr. O. B. Dreuseke, Purchasing Agent.

Stephens Bros., Stockton (two freight boats, four tow boats, two cabin runabouts).

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BARNES & TIBBITTS, Oakland (three-masted auxiliary schooners for Northern Fisheries Company, Inc.).

BENICIA SHIPBUILDING CORPORATION, Benicia (hulls for wooden steamers).

CALIFORNIA SHIPBUILDING CORPORATION, Long Beach (five submarines, three 6000-ton steel vessels).

CRAIG SHIPBUILDING COMPANY, Long Beach (four steel vessels and one schooner). Mr. John Craig, Purchasing Agent.

G. W. KNEASS, Eighteenth and Illinois streets, San Francisco (25 power launches and 200 life boats).

The Freight Rate Increase

The United States Railroad Administration authorizes a statement in explanation of General Order No. 28, increasing railroad freight rates and passenger fares, from which the following is quoted:

Director General McAdoo certifies to the Interstate Commerce Commission that in order to meet the railway operating expenses, pay taxes, rents and compensation to the carriers, it is necessary to increase the railway operating revenue. The order states that the public interest requires a general advance in all freight rates, passenger fares and baggage charges on all traffic carried by railroad and steamship lines under Federal control by filing tariffs with the In-

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terstate Commerce Commission on not less than one day's notice.

The increased freight rates became effective June 25 and cover both interstate and intrastate traffic. Class rates are advanced 25 per cent and all class rates less than 25 cents first class and proportionate rates on other classes have been cancelled.

The increase of 25 per cent applies also on commodity rates generally, except the commodities of which there is a heavy movement, on which the advances have been made by adding certain amounts to all rates or by fixing specifically the new rates which apply.

PRINCIPAL COMMODITIES AND ADVANCES

The principal heavy commodities and the advances thereon are:

Coal, 15 to 50 cents per ton.
Coke, 15 to 75 cents per ton.
Iron ore, 30 cents per ton.

Stone, natural or artificial, for building purposes, 2 cents per 100 pounds.

Stone for road work, sand, gravel, 1 cent per 100 pounds.

Brick, cement, and plaster, 2 cents per 100 pounds.

Lime, 1½ cents per 100 pounds.

Lumber, 25 per cent, but not more than 5 cents per 100 pounds.

Grain, flour, and other mill products, 25 per cent, but not more than 6 cents per 100 pounds.

Cotton, 15 cents per 100 pounds.

Live stock, 25 per cent, but not more than 7 cents per 100 pounds.

Sugar, 25 per cent, except to points in Middle States rates from the different producing sections will be maintained on the present relationship.

Copper bullion and smelter products will be advanced approximately $6.50 per ton from the Rocky Mountains and Pacific Coast States to Atlantic seaboard.

Cement Manufacturer Making Potash With Cement as a By Product

In the attempts of the United States to find some methods of increasing the potash production for fertilizers and other purposes to offset the stoppage of shipments from Germany there has come to the attention of the Bureau of Mines, Department of the Interior, a highly successful effort at the plant of the Riverside Cement Company, Riverside, California.

This company, after a number of years of costly litigation with the orange growers in the territory adjacent to the plant, because the mill deposited large quantities of dust on the groves, installed a Cottrell electric precipitator with a sole hope of abating the nuisance.

Word now reaches the Bureau of Mines that the factory of this cement company, during March of this year, went into full blast operation for the purpose of making potash with cement as a by-product. The investigator who reported upon this operation of the plant to the bureau says:

"This is certainly an interesting development of modern industry, where an apparatus installed for the purpose of saving the life of the factory, turns out to be the center of operations around which the entire plant is adjusted, the incidental profits being sufficient, at least during the continuance of the war, to make the former operation of the factory as secondary in importance.

"As there is not sufficient market to take all of the cement, the surplus clinker will be stored until the end of the war. Assuming 0.8 or 1 per cent potash contained in the raw mixture, it is expected to pay the entire operating cost and a reasonable profit from the sale of the potash alone, giving the clinker as absolute profit. It is expected to manufacture 5,000 barrels of cement per day.

"The potash extraction plant has apparently proven its value, and on the average 90 per cent of the total potash contained in the Cottrell treater dust is being recovered in the form of crystallized salts."

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Metal roofing, metal lath and metal window frames go a long way toward making a structure fire-proof. When these are of the standard pure and rust-resisting iron they form worthy portions of buildings that are erected for the future.

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Stick to Your Last

Every man's duty today is to stick to his last. Each one of us can do his part most effectively by redoubling his endeavors at the occupation in which he finds himself—railroading or farming, mining or advertising, selling groceries or making shoes, banking or lumbering. All of our every-day occupations have their great place in our industrial and commercial structure, and this great structure is the mighty force we have thrown into the war.

Our job for the moment is to increase our production and to make our facilities of distribution equal to the burdens we must place upon them. In neither one of these jobs have we the tasks which all of the countries earlier at war had to confront in the second half of 1914. Although not in the war, in reality we went through those days with the belligerents. By way of provision against recurrence of such times, we have since done a deal toward creating the nucleus of an organization for war, and in preparing our structure of finance, production, and distribution for exigencies of war we made some real progress.

Our organization for war is now taking form. Finance and industry are adjusting themselves to the new national situation. This is a period of transition. In order that the end of this period may find the country puissant with confident vigor, every man must bend to his present job, solve its new problems, and make it more significant in his community. Having done this, we can turn to the direct tasks of war in later months, when they are ready for us.—American Industries.

End of Industrial Boom in Sight

Although the erection of manufacturing and commercial structures continues to be the most prolific source of building activity at the present writing, there is a possibility that this type of construction will slow down as other phases of structural work become more active. A prominent industrial engineer in discussing the building situation stated that according to his line of reasoning and the surface facts, the end of the construction boom for industrial and commercial buildings is almost in sight and that a marked reduction in the volume of operations of this character is naturally bound to follow. The individuals and concerns that have erected new structures during the last year or two have anticipated their requirements for some time ahead. The existing high material prices have not affected this type of building endeavor to any extent, as the cost of the operations was paid out of the immense profits that were obtainable during the two past years of unprecedented prosperity. The situation contains a ray of hope, however, from the prospect that general building activity will become more prevalent over a wide territory.—Builders' Guide, Philadelphia.

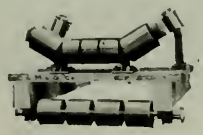
Praise for Oakland Schoolhouses

(From the Oakland Tribune.)

Declaring Oakland's school buildings to be the ideal public educational structures in America, Mr. Hubert Clark Eicher, assistant secretary of Pennsylvania's state board of education, has paid this city the highest of compliments. Mr. Eicher, an expert on school structures, says his State intends the thorough reconstruction of its school structures and, as a technician, he was sent on an all-embracing tour to pick out the best features in other States' buildings.

"I was indeed surprised when I saw the beauty and simplicity of Oakland's school structures," said Mr. Eicher with enthusiasm. "I had read much of the

A Good Thing to Remember



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It has recently been announced that an inventive genius in Florida has discovered "a secret" which will incalculably improve the process of making artificial stone, now so extensively used in building operations. It is claimed for his process that it will give to the artificial product a greater density—specific gravity—greater tensile strength, and general superiority, in every respect, to the natural stone, and yet will render the product susceptible of penetration by a driven nail.

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Personal

Mr. Henry H. Meyers, architect of San Francisco, is recovering in an Oakland hospital from a serious operation for appendicitis.

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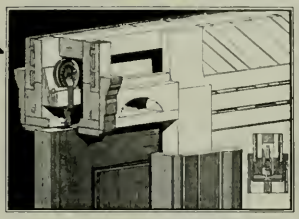

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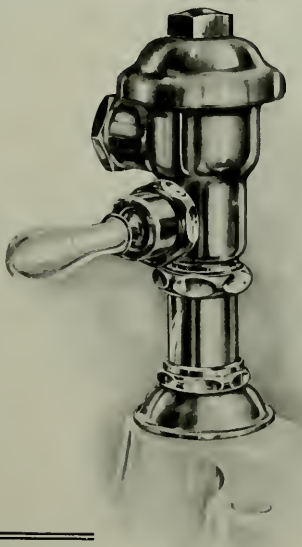

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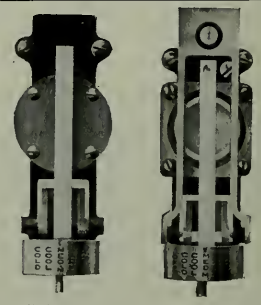

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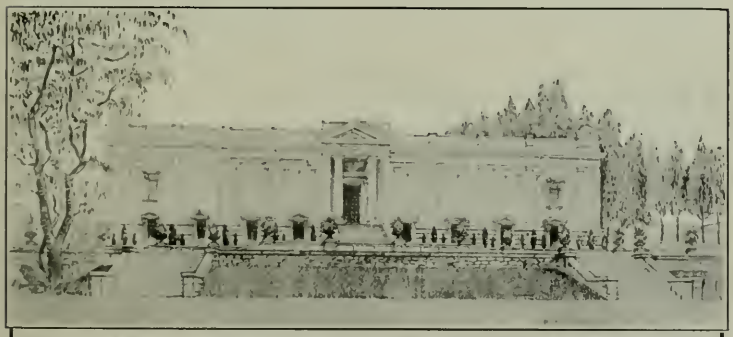

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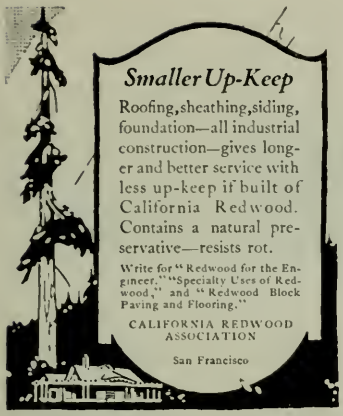
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FIREPROOFING AND PARTITIONS

Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIXTURES—BANK, OFFICE, STORE, ETC.

Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

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Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

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Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FURNACES—WARM AIR
Miller-Enwright Co., 907 Front St., Sacramento.
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Aylsworth Agencies Co., 591 Mission St., San Francisco, sole agents for California.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Fuller & Goepp, 34 Davis St., San Francisco.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Grant Rock & Gravel Co., Cory Bldg., Fresno.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

HEATING AND VENTILATING
Gilley-Schmid Company, 198 Otis St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
J. C. Hurley Co., 509 Sixth St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

HEAT REGULATION
Johnson Service Company, 149 Fifth St., San Francisco.

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Sierra Electric Construction Company, 619 Call Bldg., San Francisco.

HOSPITAL FIXTURES
J. L. Mott Iron Works, 553 Mission St., San Francisco.

HOTELS
St. Francis Hotel, Union Square, San Francisco
Multnomah Hotel, Portland, Oregon.

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Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

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INSURANCE
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A. Falvy, 578 Sutter St., San Francisco.
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.
Ralston Iron Works, 20th and Indiana Sts., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., Underwood Bldg., San Francisco.
Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., San Francisco.

LIGHTING FIXTURES
Roberts Mfg. Co., 663 Mission St., San Francisco.
J. W. Burtchaell, 357 Ellis St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

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D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
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Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
California Redwood Association, 216 Pine St., San Francisco.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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METAL FURNITURE
Ralston Iron Works, Twentieth and Indiana Sts., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

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American Standard Oil Burner Company, Seventh and Cedar Sts., Oakland.
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California Artistic Metal and Wire Co., 319 Seventh St., San Francisco.
Fair Manufacturing Company, 617 Bryant St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, 20th and Indiana Sts., San Francisco.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Sartorius Company, Inc., 15th and Utah Sts., San Francisco.
West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

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Plant, Rubber & Asbestos Works, San Francisco.

PAINT FOR CEMENT

Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.

Paraffine Paint Co., 34 First St., San Francisco.
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Fick Bros., 475 Haight St., San Francisco.

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W. P. Fuller & Co., all principal Coast cities.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

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White Bros., Fifth and Brannan Sts., San Francisco.

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California Brick Company, Niles, Cal.

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MacGruer & Co., 180 Jessie St., San Francisco.

PLUMBING CONTRACTORS

Alex Coleman, 706 Ellis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Carl Doell, Twenty-second St., Oakland.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.

California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Co., Pacific Coast branch, 635 Mission St., San Francisco.
Miller-Enwright Co., 907 Front St., Sacramento.
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Standard Sanitary Mfg. Co., 149 Bluxome St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

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Kinnear Steel Rolling Door Co., Pacific Building Materials Co., Underwood Bldg., San Francisco.

Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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Aspromet Company, Hobart Bldg., San Francisco.

Bender Roofing Company, Monadnock Bldg., San Francisco.

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United Materials Co., Crossley Bldg., San Francisco.

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Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

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The Paraffine Companies, Inc., 34 First St., San Francisco.

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Aspromet Company, Hobart Bldg., San Francisco.

San Francisco Metal Stamping Works, 2269 Folsom St., San Francisco.

SHINGLE STAINS

Cabot's Creosote Stains, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco

Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

STEEL HEATING BOILERS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.

Ocean Shore Iron Works, 558 Eighth St., San Francisco.

STEEL AND IRON—STRUCTURAL

Central Iron Works, 621 Florida St., San Francisco.

Dyer Bros., 17th and Kansas Sts., San Francisco.

Golden Gate Iron Works, 1541 Howard St., San Francisco.

Mortenson Construction Co., 19th and Indiana Sts., San Francisco.

Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.

Palm Iron & Bridge Works, Sacramento.

Ralston Iron Works, Twentieth and Indiana Sts., San Francisco.

U. S. Steel Products Co., Rialto Bldg., San Francisco.

Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

Southern California Iron and Steel Co., Fourth and Mateo Sts., Los Angeles.

Vulcan Iron Works, San Francisco.

Western Iron Works, 141 Beale St., San Francisco.

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McGilvray Stone Company, 634 Townsend St., San Francisco.
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S. F. Bowser & Co., 612 Howard St., San Francisco.

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California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

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Aylsworth Agencies Company, 591 Mission St., San Francisco.

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Sierra Electric Construction Co., Call-Post Bldg., San Francisco.

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Johnson Service Company, 149 Fifth St., San Francisco.

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C. F. Weber & Co., 365 Market St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
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United Materials Co., Crossley Bldg., San Francisco.

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N. H. Cook Belting Co., 317 Howard St., San Francisco.

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W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St., San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
Burlington Venetian Blinds, Burlington, Vt., and C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

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"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.
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Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
Keller & Coyle, 233 Grant Ave., San Francisco.

WATER HEATERS—AUTOMATIC
Pittsburg Water Heater Co. of California, 478 Sutter St., San Francisco, and 402 Fifteenth St., Oakland.

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Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland & Co., Inc., Boston, Mass. Hambly & Sons, agents for San Francisco and Los Angeles.
Imperial Co., Monadnock Bldg., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Building Materials Co., 523 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

WATER SUPPLY SYSTEMS
Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.

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Western Iron Works, Beale and Main Sts., San Francisco.

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"Gold Seal," manufactured and sold by Bass-Hueter Paint Company. All principal Coast cities.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

WINDOWS—REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 157 Minna St., San Francisco.

WIRE FABRIC
U. S. Steel Products Co., Rialto Bldg., San Francisco.

WIRE FENCE
Pacific Fence Construction Co., 245 Market St., San Francisco.

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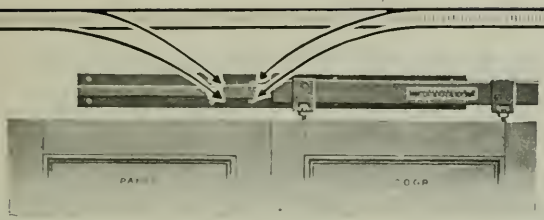

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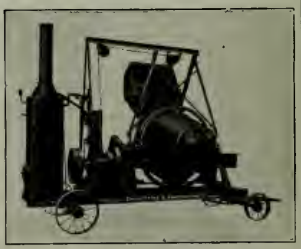

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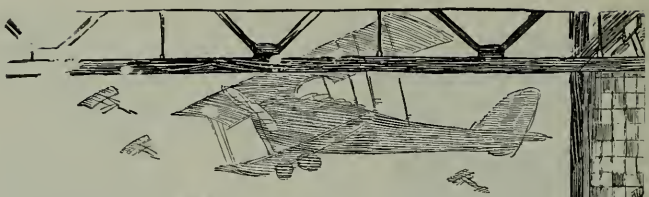

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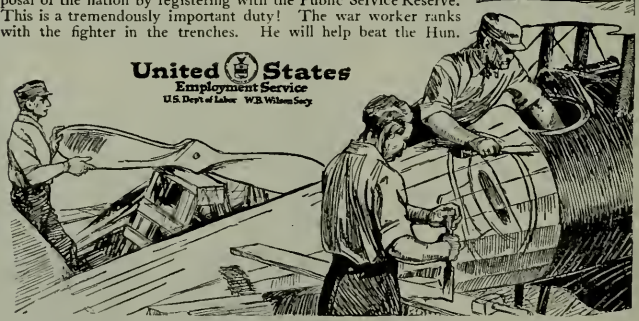

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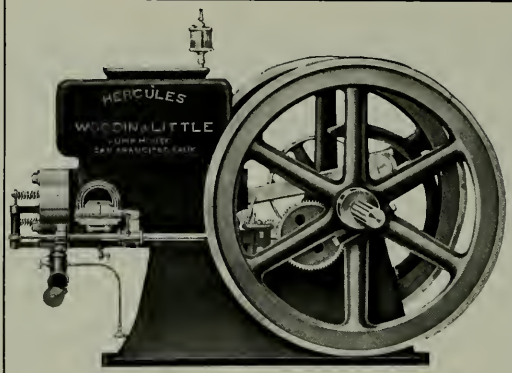

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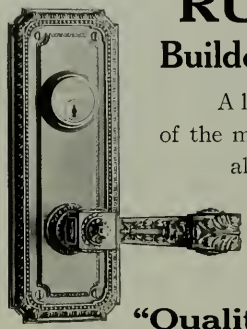

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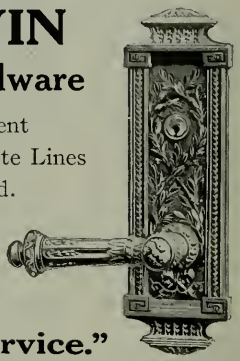

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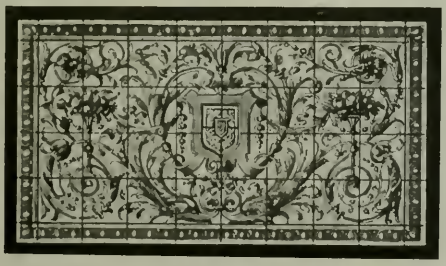

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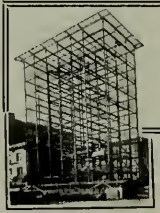

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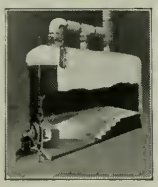

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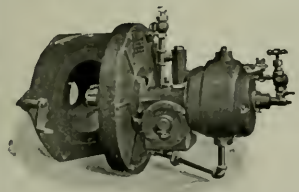

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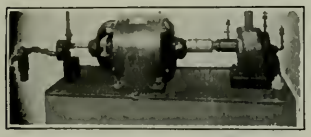

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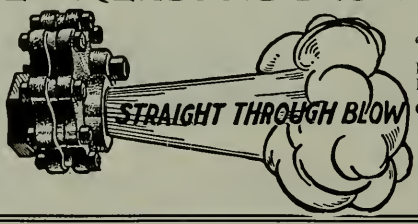

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THE ARCHITECT AND ENGINEER OF CALIFORNIA

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ENTRANCE, DE LA MONTANYA MAUSOLEUM
CYPRESS LAWN CEMETERY, SAN FRANCISCO
B. J. S. CAHILL, ARCHITECT

Frontispiece
The Architect and Engineer
of California
for August, 1918

THE
Architect and Engineer
Of California

AUGUST, 1918 Vol. LIV. No. 2.

McKINLEY MONUMENT

R. I. Aitken, Sculptor B. J. S. Cahill, Architect

Adventurings in the Monumental

By B. J. S. CAHILL, Architect

"Nothing great is produced suddenly."—*Epictetus.*

THAT enormous German gun which has been pounding at Paris ever since last Good Friday has excited all kinds of speculation, but so far I have seen no allusion to the fact that just such a gun was conceived forty years ago and described by the pen of Jules Verne in his prophetic story called "The Begum's Fortune."

In my school-days I thought this the greatest romance ever written. For several reasons it took hold of my imagination and held it for many years because its main episodes had parallel counterparts in my own career. Now, however, the actual plot itself of the story is being thrown upon the gigantic screen of history in the deadly struggle between the Teuton and the Frank. The story was written soon after the war of '70 but not published for several years. At the time, it was considered almost too bitter and for that reason it was never popular in the United States where there are so many people of German descent. And yet, read now in the light of subsequent events, it gives a remarkably accurate and by no means overdrawn picture of Prussian arrogance, brutality and inhuman efficiency which in the end, as we shall see, literally overshoots itself.

DETAILS OF DE LA MONTANYA MAUSOLEUM
CYPRESS LAWN CEMETERY, SAN FRANCISCO
B. J. S. CAHILL, ARCHITECT

DE LA MONTANYA MAUSOLEUM
B. J. S. CAHILL, ARCHITECT

As the story opens an enormous estate, to be precise, 100,000,000 dollars is turned into cash and lies in the bank of England. It is the fortune of an Indian rajah or Begum, without claimants. Heirs, however, are finally found in the persons of Dr. Sarassin, a Frenchman and Herr Schultz, professor of chemistry in the University of Jena and the fortune is divided between them equally.

We are introduced to the latter, who is of the Hindenburg type, eating an enormous dinner of sausages and sauerkraut and numerous steins of beer. After threatening his servant with instant dismissal if he is ever again four minutes late as on this occasion, the professor proceeds with his memoir "Why are all Frenchmen naturally degenerate."

Dr. Sarassin is attending an International Medical convention at Brighton when he learns of his good fortune. He announces to the assembled delegates just what has happened and creates a furore of enthusiasm when he tells them that he will devote his whole share of 50 millions to the cause of science and the saving of humanity. He proposes to realize his dream of demonstrating how disease may be abolished by the foundation of a model sanitary city, which he proposes to found on the far Pacific coast of North America.

Herr Schultz, on the other hand, immediately starts the foundation of a "city of steel" where every conceiveable type of ordnance and weapon of destruction is made on a scale never before dreamed of. He sells cannon to all the world, but principally to Germany, as the author tells us, to promote by force, the final ascendancy of the Teuton race.

The French mind delights in antithesis, and Jules Verne's conception of these cities is surely a masterpiece. Stahlstadt is built in the mountains of Southern Oregon, on beds of iron, clay, manganese and coal. The ground rocks with machinery, the sky is black with smoke, the air is acrid with fumes. Swarms of workmen are attracted from all over the world: for the efficiency and profits are prodigious and the wages high.

Frankville, Dr. Sarassin's city, on the other hand, is only 30 miles away in the foothills and faces the ocean. It is an earthly paradise; a salubrious city of sunshine, clean air and green perspectives.

The immense interest of this story for me lay principally in the planning and building of these cities dedicated to Vulcan and Hygeia—the city of steel and the city to heal. Here was the zoning idea with a vengeance. And I recall that the author dwelt on the layout of each city with as much attention to the details for death dealing devices in grim Stahlstadt as he gives to the details for securing life giving conditions in fair Frankville.

In the first city all thought was for rapid transit of vast hodies of workmen and their complete enslavement under a system of benevolent paternalism and organized prudentialism calculated to squeeze every ounce of energy out of them, at the same time lulling them to a lethe of contentment with beer and music. Music indeed was universal. To secure the utmost precision in carrying crucibles of moulten metal, the workmen moved to the strains of Strauss and Gung'l, while the foremen gave their orders to the tune of a piccolo instead of to the shrill blast of a bosun's whistle. All concerted operations of laborer's gangs were done to the chorus of Folksongs or the Chanties of the Sea.

In Frankville the main thought was to the layout of homes, parks, drainage and regulations to tend the body rather than to lull the mind. All homes were built at a given distance from each other, the walls were of hollow tile and all were reared over voids. Running water and foliage were everywhere and—a remarkably wise provision—carpets, tapestries, mats, rugs and wall papers were strictly forbidden: No germs encouraged to exist.

There is much else of city planning which I remember I made careful note of, so interested was I in these problems. And although at that time I was living in the heart of England and had not the very remotest notion of coming to America, before seven years had passed I was not only established on the Pacific Coast but was actually commissioned to lay out and plan a "city of steel" in the State of Washington and later a "city of health" on San Francisco Bay.

There has always seemed something uncanny and inexplicable in this curious personal experience. The mystery of Time is in reality the progressive illumination by experience of a sequence of events whose end is necessarily foretold in the beginning—like a movie film partly reeled off. Prophecy and premonition may yet be scientifically accounted for.

To return to the story, because of its bearing on the present war. The hero, a young Alsatian engineer and inventor, in love with Dr. Sarassin's daughter, hearing rumors of the sinister intents of the steel king, determines to penetrate Stahlstadt and learn its inmost secrets. He passes himself off as a Swiss, enters the works of Herr Schultz as a common puddler and by his industry and his genius for mathematics and

design in the matter of machinery and ordnance finally gets to the very highest position. By craftily pretending that all his clever ideas really originate with Herr Schultz, he plays on the professor's vanity and seems to gain his entire confidence.

Now Stahlstadt, like Essen today, is a secret city, walled in and guarded by the strictest military discipline. Complete control of every individual is relentless and absolute. Herr Schultz himself dwells in the central citadel—a veritable stronghold, strictly guarded and impenetrable to all but the most trusted. Here in the Bull Tower, along with his deadly secrets and surrounded by tropical gardens artificially created, dwells the Herr Professor, like a malignant spider in the center of a great web.

Our Alsatian hero, Max Bruckman, is not satisfied that he has learned the real secret of Stahlstadt, so one day, when in a conference with Herr Schultz in the latter's magnificent library, he suddenly drops his habitual suavity and taunts the professor with the fact that, after all, the Germans have only slavishly copied the inventions of the more original Americans, British and French, particularly the French. At this the professor becomes speechless with rage. Being apoplectic, he takes some time to recover himself. "So," he says at last, "we invent nothing. Very well, you shall see—and be sorry. Come with me." And he advances straight to the book cases, presses a black letter on the back of a volume and the whole case recedes, revealing a huge steel door. Through this they pass into a long corridor. * * *

The revelations that follow fill Max with horror and dismay. In one part of their journey they pass through a vast hall stored with gigantic shells. "And what do you suppose are in these?" says Herr Schultz, pointing to the great conical-headed cylinders, each seven feet high and two feet in diameter. Max is at a loss. "Gas," explains Herr Schultz laconically. "Carbonic acid gas under a pressure of 70 atmospheres. When they explode the instantaneous expansion absorbs all the surrounding heat and the temperature drops to a hundred degrees below zero, so that every living thing for a radius of two hundred yards is instantly frozen to death. A battery of one hundred guns discharging these gas shells simultaneously would kill all the inhabitants of a whole city."

After viewing other wonders of destruction, they mount many stairs and come finally upon Herr Schultz's masterpiece—the most enormous gun that Max has ever dreamed of. He estimates that it must weigh 500 tons and has a breech of at least five feet diameter. The ex-professor of Jena explains that this gun costs millions of dollars to build, but will carry a projectile with absolute precision for the enormous distance of thirty miles. The shot to be fired consists of a hundred smaller guns fitted telescopically in one giant shell and arranged to explode successively, shooting liquid flames and high explosives in all directions. Thus an entire city can be laid in ruins and set on fire at one stroke! Max Bruckman is petrified with horror when Herr Schultz coolly informs him that he intends to test his wonderful gun on the city of Frankville. "On September the 13th, at precisely a quarter before midnight, Frankville will disappear from off American soil. The burning of Sodom will be rivalled. Professor Schultz in his turn will let loose the fires of heaven."

Having shown Max the inmost secret of Stahlstadt, he calmly informs him that he must die; some morning he will not wake up—that is all.

Meanwhile Max studies how to escape. He is guarded by two giants, but otherwise allowed to wander at large in the tropical gardens, where he notes a stream which finally disappears through an iron barred culvert, evidently to the outskirts of the city. His knowledge of botany comes to his aid and, noting that his guards are inveterate smokers, he pretends to mix certain poisonous leaves with his tobacco. The giants imitate him and both are soon asleep and senseless. Max then makes for the great pattern room and hall of models and, after securing a steel file, he sets fire to the building. Herr Schultz himself soon appears in the confusion that follows and offers $10,000 to anyone who will save model No. 1794 under the central dome. Max volunteers, is fitted with gas masks with stored oxygen and plunges into the smoke, only to cross the great hall and emerge on the far side, where he makes for the tropical gardens and plunges into the stream. Usual melodrama follows. Max, sawing the cross bars until all the oxygen is gone, shakes the grill, which doesn't budge, drops his file—but of course, in the final lunge, breaks through and gets finally to Frankville!

It is the night of the 13th of September. The people are warned of their fate, but too late to do anything. Proof against germs, they have no defense against Germans. But our hero has a hunch that Schultz's mathematics may not be of the same quality as his malice. He refigures this problem in ballistics and comes suddenly to the amazing conclusion that the initial velocity which is to carry this destructive shot to Frankville is by an error far in excess of what is needed. The shot will escape the power of gravity and fly clean off of the earth, and sure enough, at a few minutes before midnight the great shell is seen and heard passing harmlessly over Frankville out into stellar space!

But the attraction of the earth holds it to an orbit like the moon, so that at regular intervals it reappears—a new satellite!

Meanwhile the detonation has exploded all of the gas shells in Schultz' laboratory and the professor is frozen to death. And here follows a clever piece of satire. There being no one to issue commands, no subordinate has the initiative to do a thing without orders from above! Consequently in a few months the entire machinery of Stahlstadt comes to a full stop and the town becomes dead and deserted. The story is well worth reading. It anticipates the big gun, poison gas, the German Gott, Schrecklichkeit, Weltmacht oder niedergang and—der tag!

I will now return to my own experience in planning a Stahlstadt or City of Steel near Scow Bay, Port Townsend, and a Frankville or City of Health near Tiburon, on San Francisco Bay. The northern city, however, was named New Sheffield and the local one Hygeia—after the Greek Goddess of Health. The names alone will show how closely they paralleled the plan and purpose of Jules Verne's romance.

By the oddest of coincidences the very night I wrote the last section, as I was returning home late to Alameda, I read in the Chronicle of the next morning, June 5, under the heading, "Twenty-five Years Ago Today," the following entry:

"Henry Woodcroft, a well-known civil engineer, died at his office, 628 Montgomery street, from apoplexy."

This was none other than Baron Henry Woodcroft-Hammond, the Herr Schultz of my experience and the president and founder of the Anglo-American Steel Corporation and the promoter of New Sheffield. His father, Bennet Woodcroft, was a Fellow of the famous Royal Society and the originator of the Patent Office Museum of London, where his bust, I believe, still adorns the vestibule of that famous institution. Like his sire, Woodcroft-Hammond was an inventor and engineer of distinction, who had done good work for Lloyd's relating to the lighter navigation of the Neva and later had assisted the Russian Government in raising sunken vessels in the Black Sea. For this service, which involved long residence in the Crimea, he was created a Baron by the Czar and made a member of the Imperial Russian Privy Council.

Later he came to California in connection with the Bonanza mines, which he supplied with a brand of steel cables and so, finally, got intimately acquainted with the late James G. Fair. Hammond was in his time well known to the iron masters of London and Sheffield, and when the Senator and the Baron "did" London together they conceived the idea of founding a rolling mills and forges on a deep water site near San Francisco. Iron ore or blooms, billets and pig were to be shipped from Spain, Norway or China and delivered straight to the rolling plant by an all-water route, where rails, ship plates and building steel for the development of the Pacific States could underent the long-hauled tonnage from Pittsburg. Senator Fair had large holdings at North Beach, where this plant was to have been established.

But Senator Fair and Baron Hammond had a falling out. Hammond concluded to go it alone and began negotiations for a site at Vallejo. The plans for the industrial city, wharves, shops and workmen's homes were prepared by Augustus Laver, the architect of the City Hall at Larkin and McAllister. But the presence of coal near Seattle and the rapid growth of the Sound caught Hammond's attention and at the time I fell in with him his enterprise had just received a new impetus from the offer of the people of Port Townsend to deed over to the Anglo Pacific Steel Corporation a plot of 1100 acres on a peninsula with deep water on one side and Scow Bay on the other.

Coal and iron ore were likewise to be found in the vicinity, and the railway and water connection were even better than in California. Hammond had a very keen mind and a remarkable grasp of detail. My own enthusiasm for this kind of problem was unbounded. I had already spent a year in Vancouver, B. C., and carefully noted how towns developed in the Northwest.

With the aid of surveys, soundings and photographs, I set to work. I think I spent the best part of one year in laying out and planning the city of "New Sheffield." The problem involved (1) the intake of raw material by water, iron ore, pig iron and coal for smelting, and blooms, billets and pig for rolling; (2) the smelting of ore, production of pig iron, the conversion of the local or imported pig into structural shapes, mostly rails; (3) the distribution of these both by land and water.

These were the major operations involving (1) a system of wharves, tracks and shunting facilities; (2) the construction of smelters, rolling mills, dumps and storage; (3) the layout of streets and car lines; (4) the planning of quarters for workmen involved and inhabitants to serve their wants; (5) the placing of public and semi-public buildings, schools, parks, recreation ground, and cemetery. An amusing feature of this plan was in the naming of streets and boulevards. There was a Hammond park and a Cahill avenue, I well remember, and it is to be regretted that these plans are not available for publication here. Every vestige of them, including two comprehensive bird's-eye perspectives, were finally destroyed in the great fire. But the habit of

CREMATORIUM, ODD FELLOWS CEMETERY
B. J. S. Cahill, Architect

COMPLETED DESIGN OF CREMATORIUM, ODD FELLOWS CEMETERY
B. J. S. Cahill, Architect

COLUMBARIUM, ODD FELLOWS CEMETERY
B. J. S. CAHILL, ARCHITECT

CEILING, COLUMBARIUM, ODD FELLOWS CEMETERY
B. J. S. Cahill, Architect

collecting data on this subject and the familiarity with the problems involved remained. In subsequent years I had collected plans of nearly all the principal cities of the world as they exist—many of the cities of antiquity, such as Priene and Timgad, and all the plans of new cities, such as Dalny and Dalgety, or remodelled cities such as Barcelona and Berlin. Nor did I overlook the ideal cities of tradition—described by Plato or Campanella—or the cities of pure fiction, like Amaurot and Theleme.

Twenty-five years ago this subject was practically unknown to any but obscure students and archaeologists. It is quite different now.

My plans for "New Sheffield" furnished the opportunity and occasion to go into this subject with far more thoroughness than if it had been, as heretofore, a mere side study.

Meanwhile Baron Hammond made several visits to Tacoma and Port Townsend and the local papers were full of scare-head articles about the great steel works. Tacoma was jealous of Port Townsend and made a bid herself to provide a site. But Port Townsend won out. On Hammond's last visit he was met by a delegation of leading citizens, taken around the bay in a tug for a final survey and a few soundings—and wined, dined and brass-banded like a conquering hero. The property was put in escrow and all that remained was for Hammond to get his people together and start construction.

A week afterwards I was walking up Montgomery street and found myself being hailed by a portly man with a large white vest and a pink face, for the "Baron" was built a good deal on Wallingford lines. He was beaming. "Well, my boy, everything is settled at last. I go to London next Saturday to see my people. We'll have a directors' meeting at the Cannon Street Hotel and I'll be back in six weeks with all the money we need."

I had always thought that the realization of New Sheffield was too good to be true, but I could not but feel that it was about to come out all right. I knew Hammond had done wonderful work in getting a lot of contingent contracts from J. J.

INTERIOR, COLUMBARIUM
ODD FELLOWS CEMETERY
B. J. S. CAHILL, ARCHITECT

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INTERIOR, COLUMBARIUM
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B. I. S. CAHILL, ARCHITECT

Hill and other big railway men interested in the Northwest. I also knew that he had done big things before and now he had real money behind him. One of his directors, a car builder of the railway town, Crewe, in England and an immense land owner in Australia, had visited my office in the Donohoe building, looked over the general plans, and given me a good deal of confidence in Hammond and the men behind him.

I concluded that I might be on my way to fame and fortune, and I possibly would but for the fact that Baron Hammond was found dead in his office the very next day!

Like Herr Schultz, he carried all this enterprise entirely in his own head and hand, and when he died his scheme died with him.

For many years I treasured a beautifully engraved stock certificate entitling me to 100 shares in the Anglo-Pacific Steel Corporation of London and San Francisco.

Thus ended my first adventure in the monumental art of town planning.

The second, in which "Frankville" was the fictional prototype, had, very appropriately, a medical man for its promoter. The Dr. Sarassin of the model health town was Dr. Benjamin F. Lyford, who was married to one of the famous Reed family, the inheritors of an enormous Spanish grant in Marin county. Consequently Dr. Lyford owned and controlled a large tract of actually the most desirable residence land anywhere around this bay. It extended from back of Tiburon all around the water fronting Raccoon straits, opposite Angel Island, and including a lovely little lagoon in Paradise Cove, clear around as far as California "City." The latter then consisted of an abandoned brickyard, one wharf, a fish-drying plant, and a duck ranch. Being intensely fond of rowing, I spent many delightful days around these shores. I soon got to know Dr. Lyford very well and before long I was privileged to carry in my pocket a key to the big iron gate which the doctor had built to keep out trippers.

Lyford's land was better than Belvedere. It is less exposed to wind and fog, has swift moving currents off shore and its formation is more varied and its hills by no means so steep. It is, indeed, far more desirable than the San Francisco peninsula, being freer from fog, much sunnier and within ferry distance from San Francisco, without any need of railway connection, for there are no mud flats to cross nor squalid settlements or factories to pass or penetrate.

Dr. Lyford, like Baron Hammond, started out with powerful support in the person of his friend, Mervyn Donaghue, who built the railway to San Rafael, which at that time ran through Lyford's land. Together they were going to do great things, but Donaghue's death threw Lyford onto his own resources. His trouble was the opposite of Hammond's. He was so comfortably fixed that the incentive to do anything to sell lots in Hygeia was lacking, unless the purchasers subscribed to all the conditions that the doctor dictated, and even then it was next to impossible to get an actual transfer. However, when I fell in with the doctor I was unaware of this fatal peculiarity. My ideas as to a city of health, inspired by the regulations for "Frankville," seemed to have tickled the doctor amazingly. His ideas ran on precisely the same lines. He, too, had collected all kinds of data for many years as to germless habitations—microbes they were called at that time. I spent more time discussing plans with the doctor than with any other client I ever had. At that time we were dealing with the raw material of a settlement—just acreage. I never ceased railing at the ridiculous habit of imposing a gridiron plan on a hilly plot: Hygeia was to be a segregated zone—detached, as it were—and wholly for residences. The layout we finally perfected was put on paper and carried out. The roads followed the hills and no grade exceeded 7 per cent. The main idea governing the plans of each home was, I must admit, somewhat arbitrary. In all cases the kitchen and dining-room were to be detached from the house proper, wholly or through an open colonnade or pergola. In the doctor's own home at Strawberry point—a solid concrete house—this was done with a vengeance. Every meal time, rain or shine, you had to go outside. A good thing for the very people who object to going outside and no hardship to those who don't object.

No house should be in the shadow of another. All bedrooms and bathrooms were to get the morning sun without exception. And as to sleeping porches, a thing unheard of in those days, there was to be at least one on every house and every house was to cost at least $5,000. No house was to line up with another on any straight road; all were to be zigzagged or in echelon. I was to supervise every plan and suggest changes where they conflicted with the regulations. No land transfer would be made which did not carry plans and a building contract with it.

Of course all these restrictions were overdone. Hardly any one would stand for them. Meantime the doctor contracted cataract on both eyes and lost his sight entirely. And thus ended another city dream.

Having tried out a comprehensive building scheme up north and one right here, my next adventure took me to the southern end of the coast.

One day an artist friend said to me, "I'll tell you a man you ought to get in with He's going to do all kinds of big things in your line down in the Sierra Madre mountains. He has a big scenic railway system and he's going to build several hotels and a great big observatory on top of the highest peak. He's said to be the wealthiest man in Pasadena and his name is Professor T. S. C. Lowe." I said nothing, but went right back to my office and started a letter which took a whole week to complete. I recalled a letter I had seen in a scrap book from Monaco with all kinds of sketches interwoven with the text. I wrote just such a letter, but the sketches I did in water color. I explained that I had plenty of ideas and was free to go anywhere and do anything. I had a pamphlet which my artist friend gave me, entitled "From Roses to Snow," written, I think, by Wharton James, the Mission expert. It showed the Altadena Electric Railway going to Rubio Canyon and spoke of Echo Mountain house and the coming observatory. From this data I sketched a great shingled chateau for the canyon, a red-roofed Swiss chalet affair on the mountain side, with the railway piercing the edge of one of its many towering pavilions, and finally the Astronomical Observatory built of rough granite boulders, half-timber work and plaster.

I had not expected much encouragement and was most agreeably surprised to get a long letter from Professor Lowe saying that my very interesting letter had given great pleasure and could I find time to run down to Pasadena and be the Professor's guest for a couple of weeks at Rubio Canyon, where I could consult with him personally and look the situation over on the spot.

In a few days I was on the "Santa Rosa," bound for Redondo, happy in anticipation and still happier to be once more on the high seas.

Professor Thaddeus Sobiesky C. Lowe was a remarkable man, chock-full of mental and physical energy. In the Civil war, as a prominent aeronaut and organizer of balloon scouting, he became an intimate of President Lincoln. In later years he turned to applied science and was the inventor of water gas among other things. He was president of the local gas company, director of several banks and practically "in" everything. They said he was worth $13,000,000. He dwelt with his large family in the finest house in Pasadena, a city of millionaires, though all his time was spent in attending to the minutest details of his mountain railway system. As with Hammond and Lyford and the fictitious Schultz, he carried everything in his own head. This, of course, is a weakness and was probably his undoing.

I was supplied with a horse and went over all the trails and had many long talks with the professor, who explained all his ideas at great length. I came back to San Francisco supplied with measurements, surveys and many photographs. From my astronomer friend, the late Charles B. Hill, I got Burkhardt's "Observatories of the World"—plans and details included, and set to work. I had made good progress on the observatory and Echo Mountain hotel, according to instructions, when the professor called on me in San Francisco and while we were at dinner explained that he wanted me to make a picture poster showing the projected buildings in color for lithographic reproduction. This seemed rather a come-down. A few months afterwards our correspondence showed that things were not going very well, and before long the Mt. Lowe railway system was in the hands of a receiver and soon after was bought in by the Southern Pacific. A year or so ago he died leaving an estate of a few hundred dollars out of what was once an enormous fortune. So here another prospect went glimmering.

The one element that makes for success or failure is the human element—the inherent merits of a scheme sometimes seem to have little to do with it. The very best proposition will go awry if the living brain at the head is too self-centered, too stubborn or too slow—or if it is cut off from effectiveness by the hand of Fate. So much has this proved the case in my experience that I have sometimes thought that the most satisfactory people to deal with are those who are dead. My three most promising clients had successively died, gone blind, and bankrupt at the very moment when success was crowning their efforts.

About this time a proposition to build a crematory in Mountain View Cemetery came up and I made a design along lines already suggested for me—for the Richardsonian vogue had about spent its force among the profession, but laymen were just getting used to, and kept it going. I made a set of drawings after careful study and a perspective to suit the notions of the promoter. The experience in the subject helped me to plan another building of this kind for the I. O. O. F. cemetery. The success of this institution, which was built from my plans and details, necessitated an addition, so that the building finally had two large chapels and two galleried cremating rooms and five furnaces, making it at the time, I believe, the largest institution of the kind in the world.

I had visited the Four Crematoire at Paris. The architect of this building had evidently conceived of cremation as a thing of horror. When first revived in Milan

it was generally so regarded. The building in Montmartre Cemetery, according to that implacable logic which so appeals to the French, was made to look exactly like a monstrous furnace, a forbidding and terrible edifice.

Darkness and death are interchangeable terms just as light and life are. In a commemorative ceremonial service for those not too intimately concerned the sense of gloom is appropriate, as in a dark church with slow music and black hangings.

When Queen Victoria died I was in charge of a committee to decorate the old Mechanics Pavilion for a memorial service. Now the public who attended came to express grief in a relative sense which is really quite a different thing from the grief of a relative. A sense of solemnity had to be created. Those who remember the enormous spaciousness of the old pavilion, with its whitewashed posts and trusses and its huge high placed windows, will realize the difficulty of making this barn look solemn for a daylight service. But the newspaper reporters of the time agreed unanimously that this service was one of the most impressive things ever done in San Francisco. My part in this I achieved by darkening all the windows with innumerable rolls of black building paper tacked in place with wood laths. I covered the open gallery rails with black and purple draperies hung with heavy festoons of green stuff and allowed no artificial light on the aisles at all, so that these draperies were not made thin and ineffectual by light shining through them. The sun bursts in the great central nave were alone allowed to be lighted. The effect was most impressive and when the 14,000 people who attended came in out of the bright sunlight to this dim cathedral they were silent and hushed in a way that was a revelation to the reporters who wrote up the ceremony.

I was asked to do the same thing a short while afterwards, following the assassination of President McKinley. But for a too long and elaborate programme this would have been equally impressive.

Now in these instances darkness had a distinct artistic value to create awe in a large mass of humanity, whose sorrow was vicarious and collective rather than personal and intimate.

When a few griefstricken relatives or close friends are assembled the function of art is not needed to accentuate grief, but to alleviate it.

Hence cheerfulness and light are more suitable for occasions where grief is too real and poignant to be played upon by any art or artifice. Mausoleums and mortuary buildings generally should not be gloomy. The appropriateness of flowers at a funeral is obvious, and as flowers themselves are born of light, the inference is clear. In this spirit I have planned a number of buildings for funereal purposes with general approval and success. Following on these lines the cremating annex for four new furnaces recently added to the Cypress Lawn Crematory was designed entirely of glass—a veritable green house, to be banked and festooned with ferns, palms and flowers, so that nothing else is visible; the walls and floors being themselves white and green glazed tiles and the iron work painted to match.

In this spirit the Columbarium in the I. O. O. F. Cemetery was designed. There was no precedent anywhere in the world for this building. The main idea was to create a sense of unity [illegible]a central screen of architecture, which in turn should mask the small recesses co[illegible]prising multitudinous wall niches which are the essential features of this type o[illegible] building. This end was achieved by constructing a large central rotunda clear to the skylight, with circular galleries at intervals, giving off to four protruding wings and four connected quadrants in between.

No space was waste[illegible] anywhere in the building and there was no darkness. The consequence was that the cheerful aspect of the interior attracted the public while the enormous number of saleable niches of all types, sizes and positions yielded large returns to the institution that promoted this enterprise, probably the most profitable investment of its kind in the world. I am not at liberty to give figures but they are truly astonishing. The remains of over ten thousand people are already interred in this building and the capacity is by no means exhausted yet.

Not long after the completion of this building I was commissioned to design a much larger one in the same cemetery. I had my sketches finished when an upheaval in the management put an end to all new plans. These were very ambitious and constituted a veritable Campo Santo, of which the present building was but a detail, about one-sixth of the entire scheme.

While this work was finishing I read with a positive thrill of the great Phoebe Hearst competition for the University of California at Berkeley. Without the slightest hesitation I determined to go in for it. I imagined everybody else would, but only three plans besides my own were sent to Antwerp from the entire Pacific Coast. Mr. Lazarus of Portland was one, Mr. Coxhead another, and Mr. J. F. Dunn, in collaboration with the late Mr. A. F. Oakey, made the third. The programme printed

in English, French and German was distributed among the consuls of all nations and was conceived on most grandiose lines. In fact it was rather overdone. We were told that there was "no limit" to the expenditure, whereas, as a matter of fact, Mrs. Hearst herself stood sponsor for one building of the entire group. One or two rich men it was assumed might come forward with a million a piece, but at that date, 1897, no one had guaranteed anything. I got this from Mrs. Hearst herself. But there was plenty of money for the competition expenses—over one hundred thousand was spent on this alone.

When this complicated machinery was finally put in motion and the whole world combed over for the right man—when they found him they threw him aside! The second best was likewise discarded and so was the third. The actual work was given to one of the two who came in fourth and the plan now being worked out is not in the least bit even like the plan originally submitted and awarded fourth prize.

The initial programme announced the plan as that of "A City of Learning." I had planned a City of Labor, a City of Health, a City of Pleasure, and a City of Death. Now I was to try "a City of Learning." This was the most monumental and most attractive of all. I was quite well acquainted with Mr. J. B. Reinstein and borrowed from him the plaster model of the U. C. grounds. Of this I had a fac-simile made in plaster, neatly shellacked and mounted. From this, supplemented by frequent and prolonged visits to the University, I laid out my scheme.

And indeed the crux of the whole problem lay in the grades—the trend of the hills at the back of the University. It occurred to me that it was simply ridiculous to allow the checker-board streets of Berkeley townsite to have anything to do with the parti of the University. Yet many of the competitors seemed to think that their buildings had necessarily to align with the streets surrounding the plot. Even Bénard did this, but in a different sense to anyone else.

Most of the plans made University avenue the main axis, but three out of the four first slewed this axis round more or less. The main axis of my own plan was a diagonal of about 45 degrees. The winner went 45 degrees more and made his main group at right angles to University avenue. Of course, it looked very clean and symmetrical. None the less, I think it was the one weak spot of the Bénard plan, because on his own section the foundations of flanking groups on the hill side are far above the roofs of the corresponding group below—although on the plan the symmetry is perfect.

No large group of buildings can be placed anywhere on a slope unless the axis is at right angles to the general trend. Then the scheme rises and falls equally on either side.

The programme spoke glowingly of one grand coup d'oeil, but it is clear this is only possible for one group of buildings to serve for long-distance effect.

The University, to my mind, consisted of three distinct divisions, which I named Education, Recreation and Habitation.

Education, which is the main thing, the biggest, I placed highest up on the fan-shaped or triangular group—the base being set highest of all on a natural ledge on the hill side, facing the ferries, and the two wings, consisting of rectangular courts, converging to the apex. The ends or four corners of these courts were punctuated with large single separate buildings of a semi-public and quite monumental character, the Museum, Auditorium, Library and Fine Arts building—all about equally important and equally detached from the school proper.

Next below comes *Recreation*, with an artificial rowing and swimming lake, held up on the low side by the embankment that forms the bleachers for games on a still lower campus. In this region are gymnasiums and drill halls, etc., and below again, among the trees and convenient to the town, are the dwellings and clubs and dormitories that make up the *Habitation* group

I spent so much time and thought on the parti that in the rendering I fell down sadly. Reinstein had laid so much stress on the fact that a great fundamental idea was the thing—even if shown on a scrap of wrapping paper (that is how he put it)—that I made the very unwise decision to save time by tracing my buildings (at so many different angles) on to cloth! Fatal error. To bring out the landscape and water features I had to use an air brush, and the big plan—seven feet long—had a very peculiar Oriental appearance. Since one package of plans was known to have come from Tokyo, I was told that my plan was actually taken for the work of a Japanese. For all that, I was informed that my plan was considered a decidedly "strong one" and was one of the last six to be thrown out.

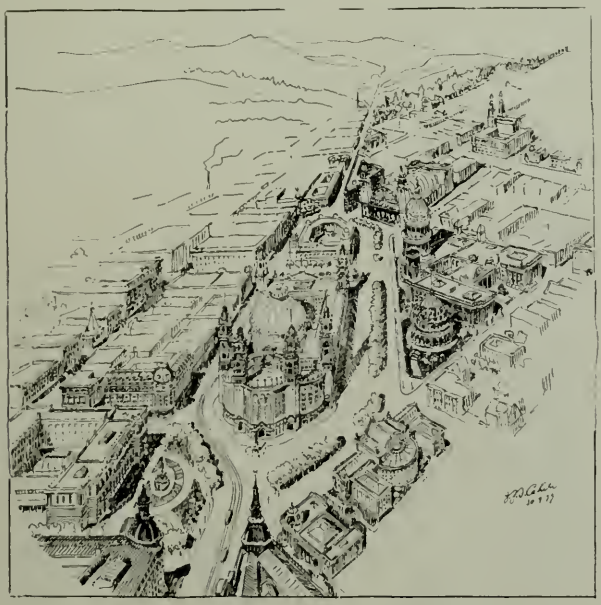
There were 105 plans submitted, and eleven chosen for final test and four others rewarded. I was in Antwerp soon after the exhibition of the first plan. When the result was announced I was staying with an old friend in Bruges. We had just been for a walk to Zeebrugge. On our return a marked copy of a London paper awaited us. Mrs. Booker, my hostess, was sure I was among the elect and insisted on reading the

APPLIED
SCIENCE
OR
INDUSTRIAL
GROUP
COLLEGE PARK
PURE SCIENCE
CAMPUS
BASEBALL DIAMOND FOOTBALL

Opposite page—PLAN SUBMITTED IN THE PHOEBE HEARST UNIVERSITY OF CALIFORNIA COMPETITION. B. J. S. CAHILL, ARCHITECT

This page—DEVELOPMENT AND ELEVATION, PHOEBE HEARST UNIVERSITY OF CALIFORNIA COMPETITION; B. J. S. CAHILL, ARCHITECT

PLAN TO (1) BEAUTIFY MARKET ST (2) TO OPEN UP THE CITY HALL
(3) OPEN UP THE POST OFFICE TO PROVIDE (4) A PUBLIC LIBRARY
(5) MONUMENT SITES (6) PARKS (7) FOUNTAINS AND (8) TREES FOR THE
ADORNMENT OF THE CITY AT NO COST TO THE CITY
EXPLANATION FINANCIAL
THE CITY CONDEMNS & BUYS 6 BLOCKS OF PROPERTY FROM THE CITY HALL TO JESSIE ST BETWEEN 9th & 7th & 1 BLOCK BETWEEN STEVENSON & MARKET FROM 7th AND EAST
ENTIRE AREA IS THEN RECONSTRUCTED
BLOCKS A B C D E & HOTEL SITE TO BE SOLD BY CITY AT ENHANCED VALUE
THIS CHANGE ENABLES THE CITY TO BUY LAND FOR A NEW LIBRARY at 100¢ A FOOT WHICH EASILY BECOMES WORTH FROM 200¢ TO 400¢
N.B. THE PROPERTY SOLD MUST ADVANCE 287½ TO PAY FOR THE PROPERTY BOUGHT. BLOCKS A & B ADVANCE 400% AND THE OPERA HOUSE & HOTEL SITE IS THE FINEST IN TOWN HENCE AN AVERAGE ADVANCE OF MUCH MORE THAN 287½
CONGRESS MAY BE INDUCED TO ALLOW A BONUS FOR IMPROVING THE POST OFFICE SITE A LARGE AMOUNT OF ADJACENT PROPERTY IS ASSESSABLE FOR BENEFITS CONFERRED & FINALLY THE MERE FACT OF LIFTING THE CLOUD NOW OVER THE CITY HALL LOTS WOULD STIMULATE SOLID IMPROVEMENTS & RAISE VALUES 10% ALL OVER THIS NOW BLIGHTED AREA
29.99 S.F.
B.J.S. CAHILL ARCHITECT DOWNIE 1899
LAND LOSS IN AREA 28.73%
GAIN IN MARKET ST FRONTAGE 29.86%
GAIN IN THOROUGHFARE 105.83%
FRONTAGE OF MARKET ST. 1852.50 feet deep
425.00 ft
2925 ft
764,000 sq feet
1,400,000
1,400,000
MARKET ST
9th ST
8th ST
7th ST
MISSION ST
MARKET ST
A
B
C
D
PLAZA
CITY HALL
POST OFFICE
PUBLIC LIBRARY
OPERA HOUSE
HOTEL
SCALE
CIVIC CENTER PLAN OF 1899
B. J. S. Cahill, Architect
DOWN-TOWN OR METROPOLITAN MARKET STREET
RETAIL REGION
centered at FIFTH and POWELL
WHOLESALE REGION
centered at FRONT and FREMONT
PORTIONS of MARKET ST DEFINED COMMERCIALLY
AS
ARCHITECTURAL HEAD
ARCHITECTURAL BODY
ARCHITECTURAL FOOT
PORTIONS of MARKET ST DOMINATED ARCHITECTURALLY
BY
OPERA HOUSE LIBRARY P.O. and PLAZA
CHRONICLE EMPORIUM PHELAN BLDG.
CALL
EXAMINER PALACE HOTEL CROCKER BLDG
THE FERRY and PLAZA
2000 FEET
2000 FEET
2000 FT
2000 FEET
LOWER MARKET ST AS AN ARCHITECTURAL INTEGER
N & B FIRE LIMITS IN BLACK
LOTTA FOUNTAIN
CIVIC CENTER PLAN OF 1899
B. J. S. Cahill, Architect



CIVIC CENTER PLAN OF 1899
B. J. S. CAHILL, ARCHITECT

result. "Why, yes," she said, "here you are: Bernard Ca—or, no, it's Cauldwell." She didn't see very well and Bénard had been misprinted and all the names more or less jumbled up. I was genuinely disappointed because I believed I had a real plan, though I admit the poor rendering and fussy design.

After my return from Europe by way of the West Indies and Panama Canal, I naturally had time on my hands. While calling on my old friend Archer, he said: "Why don't you get up some city improvement scheme or other? Mr. Phelan is Mayor and he has no end of ambition to do something for San Francisco and make a record." I began to think this a good idea, but what could I suggest? I was living at the St. Nicholas Hotel at Hayes and Market and my office was at Market and Taylor. I began to study the two blocks of land that separated Market street from the City Hall, and every day going and coming I took a different route until the whole district was very familiar.

The Post Office at Seventh and Mission was being constructed—the steel frame going up. Before long I worked out a scheme of remodeling this section of San Francisco in such a way that the improvements paid for themselves.

The entire problem was solved as herewith presented and I showed a rough diagram of the change to Mayor Phelan. He caught on instantly and took me next day straight over to the Examiner office, where the scheme was illustrated on a whole page for the issue of Sunday, October 8, 1899.

I showed the scheme to many people before the Examiner published it. It created immense enthusiasm. J. B. Reinstein, trustee for the Hearst University of California plans, got so excited about it that he jumped up from his desk, pounded my sketch with his fist and shouted: "That's exactly the kind of scheme we are looking for and Mrs. Hearst has promised $5,000 cash for the man that comes forward with the best idea to improve San Francisco." Had I not known Reinstein pretty well, I might have gone 'round to collect the next morning. Mr. Albert Pissis, quite a different kind of man, told me deliberately that I had struck a very brilliant idea. The plan, he said, was "just right."

Mr. de Young promised to publish it in the Chronicle and Mr. J. D. Spreckels offered to give the same space the Examiner gave in the Call. Mr. Fremont Older of the Bulletin, however, thought the idea "chimerical," but Will Irwin wrote it up for Cosgrove's Wave. Mr. Irving M. Scott of the Union Iron Works endorsed the scheme in a public speech and Mr. George Crocker, president of the Southern Pacific, and the company's land agent, Mr. W. H. Mills, promised me their support. Among other friends and enthusiasts for the scheme were Mr. Ernest Denicke, president of the Mechanics' Institute; Mr. W. G. Harrison, president of the Olympic Club; Mr. Albert Gerberding, president of the Bohemian Club; Mr. Kent, president of the Builders' Exchange; Mr. A. S. Baldwin, Mr. A. B. McCreery, Mr. David Hewes, Mr. Thomas Magee's sons (but not T. M., Sr.), Mr. F. W. Dohrman, Sr., and Mr. E. C. Jones of the Gas Company, and most of the architects, including Mr. Willis Polk.

I was advised not to give this scheme to the Chronicle and Call, so that the Examiner could make it their scheme while the other papers opposed it. This sounded very cunning and I acted accordingly—a thing I regretted afterwards.

The Examiner announced it as "the most novel scheme yet undertaken to make San Francisco the most beautiful city in the world—fascinating to a degree—an idea so stupendous and yet so utterly inexpensive that you will wonder why it has not been thought of and put into effect before."—October 7, 1899.

"A gigantic scheme to transform the entire aspect of the city's business center and to cost the city nothing. This newest and by far the most plausible solution (i. e., redeeming the City Hall from its obscurity) strikes you as a convincing revelation. One can hardly look at the plan without feeling enthusiasm creeping into his finger-tips."—Carroll Carrington in the Examiner, October 8, 1899.

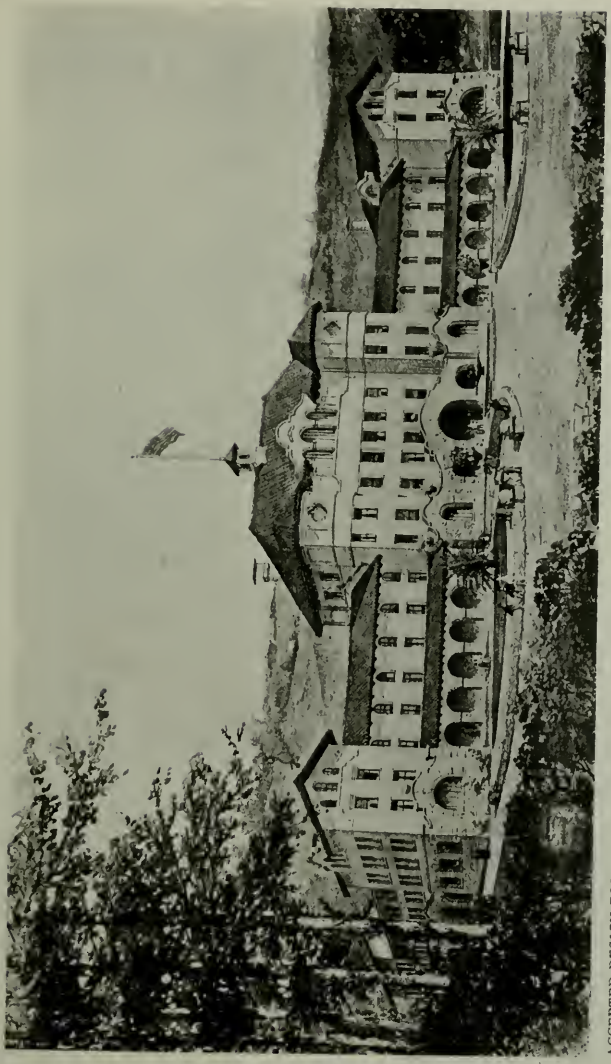
And so on for half a page, with many allusions to this keen-visioned, far-sighted and inspired architect, etc., etc. I remember getting hot at the title, "An Architect's Dream of Splitting Market Street," etc.

I did not consider it a dream at all but a sane, cold-blooded plan, which I was certain could be carried through.

So once more fame and fortune seemed actually in sight.

Mayor Phelan could have done much, but he had a scheme of his own—the "Panhandle Extension in a Straight Line"—to which my plan formed, as he said, "an agreeable introduction." Two buildings about to go up on Market street were abruptly stopped, but, showing how various are people's views, another owner immediately came to town and started Mr. Pissis planning the Callaghan Block, a $250,000 gore, on McAllister and Market. I often wondered why Mr. Pissis lost enthusiasm for my plan. Years afterwards I found out.

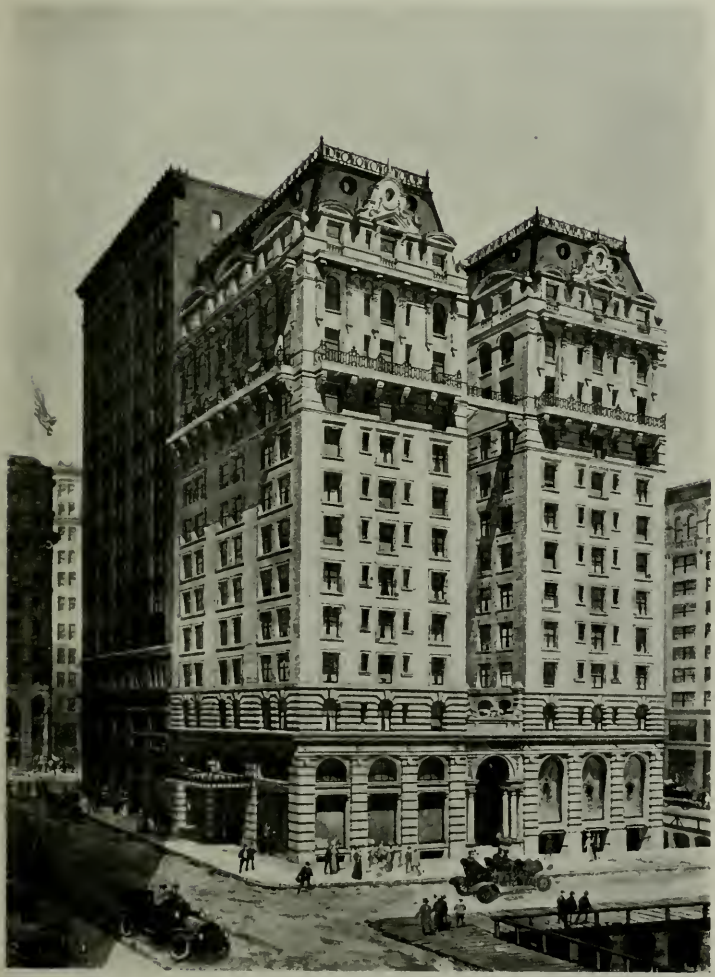
This ended all hope of ever doing anything and I gave up the idea and turned to other things.



ACCEPTED DESIGN FOR ODD FELLOWS HOME, SAN JOSE
E. J. S. CAHILL, ARCHITECT

SUCCESSFUL DESIGN FOR CITY HALL, VANCOUVER, WASHINGTON
B. J. S. Cahill, Architect

MAUSOLEUM, SAN LUIS OBISPO
B. J. S. Cahill, Architect



DESIGN FOR GRAND HOTEL, SAN FRANCISCO
B. J. S. CAHILL, ARCHITECT

PLANS, MULTNOMAH HOTEL, PORTLAND, OREGON
B. J. S. CAHILL, ARCHITECT

DESIGN FOR MULTNOMAH HOTEL, PORTLAND, OREGON
B. J. S. Cahill, Architect

EXTERIOR, MULTNOMAH HOTEL, PORTLAND, OREGON
B. J. S. Cahill, Architect

BALL ROOM, MULTNOMAH HOTEL, PORTLAND, OREGON
B. J. S. Cahill, Architect

DINING ROOM, MULTNOMAH HOTEL, PORTLAND, OREGON
B. J. S. Cahill, Architect

MAIN LOBBY, MULTNOMAH HOTEL, PORTLAND, OREGON
B. J. S. CAHILL, ARCHITECT

I put a lot of work into this scheme, also time and money—not in making pictures or picture plans—that I consider beside the mark. I went into the real estate aspect, the publicity and promotion generally, and I learned a very great deal.

The scheme failed because of the Callaghan building primarily, and then, as I since discovered, other interests were working to develop another part of San Francisco, viz., Union Square and the St. Francis Hotel. I felt a subtle opposition in several quarters, notably from Jeremiah Mahoney, who was building the St. Francis, and others who had interests in its success. I had written "site for huge hotel" on my plan and it did not escape observation by those interested. You cannot get away from the fact that in any city one man or one group can and does continually drag a city's development this way or that, according to their interests. It is a factor to be taken into account along with grades, avenues of approach, transportation facilities, etc. When this very City Hall was first commenced, Mr. John Nightingale informed me of very powerful opposition to the whole scheme by the so-called North End men, Messrs. Sam Brannan, Michael Reece, Nick Luning, Sharon, Ralston, Richardson and others. This phenomenon can be studied right this minute in Los Angeles and in San Jose to my own proper knowledge, as lawyers say.

But the men or interests who attempt this do not always succeed. If the St. Francis Hotel really killed my plan of 1899, I was compensated in a way by exactly the same process in Portland, Ore., only this time I was the architect of the hotel. And the hotel project was engineered by Mr. C. K. Henry for the sole purpose of bringing business in the direction of his own building, so that he could sell out at a big profit and retire. The R. R. Thompson Estate owned a whole block in a part of Portland that was receding in value. If the town is moving your way, it is safe to anticipate a little, as New Yorkers did on upper Broadway; but if the town is going away from you, you have little hope until some such period when the wave of prosperity returns, as it often does.

I went to Portland to plan the Multnomah Hotel, which finally developed into a nine-story one, with deep two-floor basement, designed on first-class hotel lines, with all that this implies—the whole costing nearly a million. The property did not pay at first and was recently sold. At present, with a lighter debt load, it is in a fair way to success under the present new and efficient management.

The essence of the plan consisted in dividing the 200 feet into nine structural bays of 22 feet each, each bay containing two-room units on each side of a central hall. Three pavilions, with two light areas between of about 29 feet, run parallel north and south and are connected with two stair and elevator lobbies tying the three pavilions one bay north of the center. Thus all rooms give onto outside courts.

Successive managers have testified that they know of no better layout for a hotel anywhere. Familiarity with hotel problems was gained in working out the Grand Hotel for Market street. No more complicated problem than the layout of a first-class hotel is ever put to an architect. I except a theatre; and the first sketches included a theatre and also a system of arcades.

An ideal tall office building is comparatively simple. All blocks in Portland are 200x 200 and each corner is 100 feet square. A tall building to suit one corner would suit any other, therefore I set to work to develop a perfectly logical plan, realizing that the same plan would suit not one but a score of owners.

I finally arrived at a solution in a remarkable manner, which I communicated to Dr. Addington Bruce, who was collecting instances of the kind.

In his book, "Adventurings in the Psychical," in the chapter on the Subconscious, he writes:

"A typical case was recently communicated to me by a well-known Pacific Coast architect, Mr. B. J. S. Cahill. He had been commissioned to design a tall office building to be erected in Portland, Ore., and he determined, if possible, to plan one that would be a real contribution towards the solution of some of the most difficult problems of modern commercial architecture. For weeks Mr. Cahill labored hard to devise a building that would unite a maximum of beauty, solidity and capacity with an abundance . . . of light and air for the many offices it was to contain. The structure he ultimately conceived was certainly novel and differed conspicuously from the ordinary four-sided office building with its inner offices lighted from a court.

"His plan called for the construction of a building shaped much like a St. Andrew's cross, or like a square with a triangle cut out of each side. In this way the need for an inner court was completely obviated, and the only dimly lighted portion of the building would be its central "core." Here the elevators and stairs were to be located.

"According to the architect's own statement, this plan—which has been highly praised by so eminent a critic as Mr. Montgomery Schuyler—was born in his mind while he slept. One night he saw in a dream a building shaped in this fashion and knew that his problem was solved. He tells me that on awakening he made his rough

DESIGN FOR HENRY BUILDING, PORTLAND, ORE.
B. J. S. CAHILL, ARCHITECT

sketches of the plan in a pocket note book—one showing the general design, the other indicating the appearance of the building when completed."

I quote a few sentences from Mr. Montgomery Schuyler's criticism in the May, 1911, issue of the Architectural Record:

"This design has a substansive architectural interest quite irrespective of the local interest. It is a contribution towards the solution of the problem of the period in commercial architecture. A great economy in structural steel is plausibly claimed for a construction in which the main loads are brought near the center and in which, by the arrangements of the supports, which are twin columns six feet apart, connected by web plates in every story, it is maintained that rigidity of the structure is attained with lighter members than would otherwise be practicable."

To this I will add that the steel cage has four distinct vertical planes for bracing—two boundary planes and two diagonal ones as against only two vertical planes for bracing in the ordinary rectangular frame, a structural advantage for resisting wind or earthquake stresses not brought out by Mr. Schuyler's description. To continue: "Manifestly the design is limited in application to its particular purpose—that is to say, to a square of not far from 100x100 feet and on a corner. But for such a situation it may very well seem that the architect of this building in Portland has solved a typical scheme which will impose itself upon other architects who have to meet essentially the same requirement."

When this building has been erected and I have been recompensed, such a thing is more than likely. Meantime I trust that no "robber barons of the brain" will attempt to do any such thing.

And this train of thought brings me back very naturally to my second plan for San Francisco—that of 1904, the one which I conceived alone and advocated against all sorts of powerful opposition, but which finally won out and was adopted eight years afterwards, although without a cent's reward or a word of thanks or one line of official acknowledgment. For such was the outcome of my thirteen years of work and effort to create a Civic Center by indicating sites for a group of monumental buildings about the City Hall, so arranged as to redeem that building from its then obscurity and to create possibilities for a grand architectural ensemble to be established in advance and filled out in the years to come.

The intense enthusiasm for civic magnificence dates back in my experience to a time when I occasionally visited my father at the London War Office in Pall Mall—itself a street of palaces. I loved to ride on the top of an omnibus and took immense pleasure when passing between the glories of Westminster and Trafalgar Square. But I always felt quite indignant and worried when I passed a stretch of Whitehall called Parliament street. That really stunning thoroughfare was choked up by a miserable block of low brick buildings and a little alley (King street, I think) intervening, which spoiled a magnificent vista of Westminster Abbey. I wanted very badly to see this block torn down, so that, together with Parliament and King streets, this area should be a continuation of the much wider Whitehall and so continue that avenue in one magnificent sweep to the old Westminster Hall, built by William Rufus, the Abbey and the Houses of Parliament. I spoke about this to my father. He said very gravely: "Why don't you write to the Metropolitan Board of Works about it?" I did so and waited many mornings to get the postman before anyone else should, because I dreaded anything like ridicule. The answer came in a long blue envelope with a heavy embossed red crest. I do not recall the contents, because it is natural to forget unpleasant things. The sense of the letter seemed to be that I had done something very silly. I was glad indeed that, as usual, I had kept this to myself.

When I returned to England some sixteen years later, in October, 1897, my brother met me at Waterloo Station. As we were riding home in a hansom, I noted that we were passing a great boarding behind which clouds of brick dust were ascending. We were passing Parliament street. The old objectionable block was being torn down to widen Whitehall and create a site for the New Sessions building, just as I had long ago proposed to the Metropolitan Board of Works!

In the years following, how often I have thought of this and what immense confidence it placed in me when others ridiculed my schemes to improve San Francisco.

One day, early in 1902, I received a magazine from New York, entitled "Municipal Affairs." I opened the first page and became instantly interested, because here was an article on an obscure subject exactly in line with my own thoughts for so many years, and the title—the new and wonderful title—gave the whole matter the vividness and illumination of a lightning flash. It was

"Civic Centers"

By John De Witt Warner.

It was illustrated with plans of the Acropolis of Athens, The Forum, Vatican Mount and Quirinal of Rome, the "Burg" of Vienna, and other centers of Paris, London, Berlin and Madrid.

And then, to my great astonishment and delight, under the heading "Current Projects in the United States—San Francisco," was a cut and an account of "Mr. Cahill's plan for San Francisco," followed by a sketch of Mr. Wight's suggestions for Chicago and Mr. Brunner's scheme for Cleveland. The phrase "Civic Center," which Mr. Warner assured me originated with him, I thought so apt that in my plan of 1904—entirely different to the plan of 1899—I called it a plan to create a "Civic Center." This plan was sent to Mr. D. H. Burnham in Chicago by the Adornment Society of San Francisco, founded by Senator Phelan. The scheme was at first wholly incorporated in the Burnham plan by Mr. Bennett. Later it was modified and finally omitted, but another Civic Center was defined at Van Ness and Market. Thus the phrase remained and was used by Mr. E. F. O'Day in the Burnham Report, which I was the first to publish in its entirety in the February, 1906, number of the American Builders' Review. The phrase is used all over the world now and means different things to different people from its original monumental sense for a mighty metropolis all the way down until at last it does duty to define a ladies' sewing club at Yapps Crossing or Milpitas!

I worked out this Civic Center plan at the request of Mr. Thomas McCaleb, secretary of the Adornment Society, who had written to me for my plans of 1899. Mr. Phelan was founder and president of this society and it was made plain to me by Mr. McCaleb that my plans should, if possible, include particularly the region where the Panhandle, upon extension, could intersect Market street at Van Ness avenue. I began on this suggestion, made a number of sketches, but soon realized that here was an awkward angle and, however ingenious or radical the layout might be, the result was to put a solid bar across retail Market street and the scheme would therefore never carry. I did all this long before my old friend Bennett tackled the problem for Mr. Burnham.

About this time I read in the papers that a new Library site was offered to the city at Van Ness between Polk, Fulton and Hayes, block 67, and was likely, as Mr. H. U. Brandenstein told me, to be accepted. I saw at once that if this were done then the Mechanics' Pavilion would form the south boundary, the City Hall the whole east boundary and the new Library half the west boundary of a large rectangular space of two whole blocks west of the City Hall, which, if cleared away and parked, would only need two more monumental buildings—one alongside the Library and one opposite the Mechanics' Pavilion—to form a hollow square bounded by three large public buildings already secured and splendid sites for two more. I assumed that the old Mechanics' Pavilion block would be used ultimately for a huge auditorium, although many efforts were made to put it elsewhere.

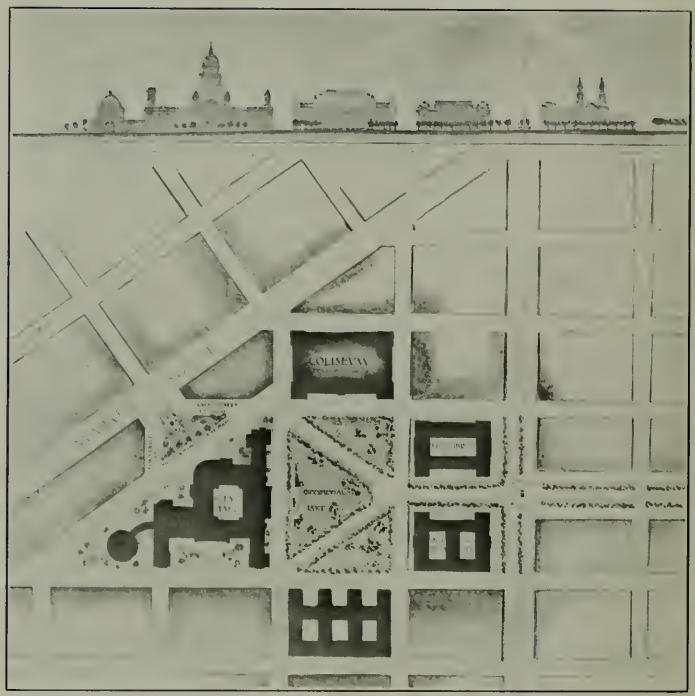
The more I studied the conditions the more favorable they grew. Dozens of times literally I walked the whole length of Fulton street from Larkin street to Alamo Square and thence to the Panhandle terminus. First from the grand plaza of the Civic Center was to be an axial extension made by widening and parking Fulton street, after the manner of Commonwealth avenue, Boston. Fulton street I found one of the most backward streets in San Francisco. I recall a pickle factory and a brewery, and very few buildings of any consequence. By buying at low prices the city would gain in the immense increase of values that a park-lined residence street running west would command. The longitudinal section was a clean, long parabolic sweep, without undulations. To get over a steep grade at Fillmore street a loop was planned, with a fine monument site in the hook of it opposite to the long sweep leading to the City Hall dome. This brought the boulevard to Alamo Square, into which a cutting was to be made to the opposite corner to save 50 feet of rise, and thence a "chain of parks" to the Panhandle. The grade nowhere exceeded 3¾ per cent—and, odd to remember, I thought invariably of pleasure teams and horse traffic and never of motors. It was just that long ago!

I worked six months on this plan and presented it to the Adornment Society. It was then sent to Burnham in Chicago. I sent a photo of it to Mr. Phelan in New York. He wrote me an appreciative letter, but criticised my Panhandle extension, saying that it "ended at the City Hall in a cul-de-sac"!

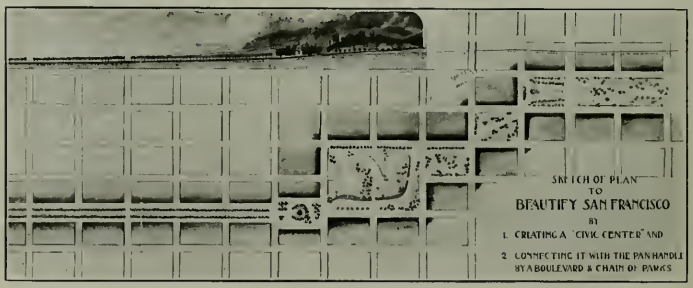
A classic example of the effect of prejudice on a cultivated mind. If every avenue that leads to a monumental building is a cul-de-sac, then American cities need cul-de-sacs. The very grandest vistas of Paris are all cul-de-sacs. Mr. Phelan of course used the phrase erroneously.

When Mr. Burnham finally arrived I was sought out to go with him to look over the ground, but my telephone "was temporarily out of order." The secretary of the Adornment Society then sent by messenger boy a long note to my home. I found this late at night. It was dated Pacific Union Club and it stated that Burnham wanted to see me, that they had tried to find me all day. It said that Burnham was delighted with my Civic Center plan and that there was no doubt that he would adopt it, and a good deal more on the same lines.

At last the big idea was getting recognition! For all that my attitude was modest enough. I merely wanted to "do my bit," believing that Mr. Burnham's immense prestige was the best guarantee for realization and that of course the "Civic Center"



Part 1—THE CIVIC CENTER (Enlarged)


SKETCH OF PLAN
TO
BEAUTIFY SAN FRANCISCO
BY
1. CREATING A CIVIC CENTER AND
2. CONNECTING IT WITH THE PAN HANDLE
BY A BOULEVARD & CHAIN OF PARKS

Part 2—FULTON STREET BOULEVARD EXTENSION
Original Civic Center Plan made by B. J. S. Cahill, July, 1904, at the request of the Adornment Society and presented to D. H. Burnham of Chicago.

was merely one feature of a much larger programme. As a matter of fact, however, it was the only vital thing in the whole subsequent programme.

Later on in a speech at a dinner given by Mr. Phelan at the Bohemian Club, Mr. Burnham said that I had "furnished the best contribution" of any one in San Francisco to date. The much-heralded Mr. Bennett, who was to draw the plan for San Francisco, turned out to be an old friend whom I had known intimately for years when he worked here for Architect R. White. I knew his brother, Charlie, then with Balfour-Guthrie, and his father, Captain Bennett, who once told me that he had sailed "over one million miles" of water. We all liked "Ted" Bennett in the old days —and when I went for a holiday once I got him to mind my office. He used to show me his water colors. I remember how tame and spiritless they were, but I admired his perseverance and industry. In 1897-98 I looked him up in London and we dined together a couple of times; once I recall at the Holborn. He was working with an Anglo-French corporation doing building in Boulogne. Later he returned to Paris and then I lost track of him. He was not forceful or brilliant, but he was exceedingly diligent and painstaking and had a most engaging and amiable personality. He would have made an ideal model for St. John, according to the old tradition of the Renaissance.

Mr. Bennett's dreamy disposition leaned to landscape and parks more than to the piles of intensive masonry that make up the scene of a metropolis. He had planned some Chicago playgrounds, but showed neither sympathy nor interest in the Civic Center idea. The plan he made for San Francisco was in the main dead against a fundamental law of city planning. I will state that law, "All City Improvement schemes are realized along the lines of the greatest resistance."

To superficial minds the opposite seems the truth. Mr. Bennett fell into this error and his plan dealt with all kinds of diffuse and scattered projects of a quasi-classical nature—academies, amphitheatres, athenaeums, and peripatetic porticos out on the fog-blown hills; all attractive enough on paper, but entirely lacking in the remotest likelihood of realization.

His second error was the common one of men devoid of positive and compelling convictions of their own. He had none based on the actual situation, so he took his main idea from some one else, M. Hénard of Paris. Now the Paris problem was utterly and entirely different from ours. To begin with, it is a presumptuous pose to compare our city, San Francisco, with Paris, a city inconceivably ahead of us in development. If we want to emulate Paris we ought first to do what Paris has done in the past and not think that the congestion problem of the center of Paris, which M. Hénard tackled, is our problem. The center of San Francisco around the City Hall is in no sense congested; quite otherwise. Yet Mr. Bennett, in feeble imitation of M. Hénard, planned with great pains, and if realized at enormous cost to provide a "periphery of distribution," if you please, to alleviate a wholly imaginary inrush and outrush of traffic at Van Ness and Market! Around this spot he contrived a huge heptagon of new streets for this purpose. Fifty or more years from now this might be desirable, and the cost will be very much more, indeed. But here we come to the law above stated. The change if made would be very needful and therefore necessary, no matter how great the "resistance" of expense. But Mr. Bennett was thinking of congestion across a main artery, whereas what we want is a beauty spot on side streets. And now let us note that an equally absurd but exactly opposite kind of error was made by another of Mr. Burnham's champions, Mr. Willis Polk. Everyone has admired the peristyle for the Ferry building, so cleverly drawn by Mr. Polk and so long on public exhibition. But let us consider the scheme, not as a pencil fantasia, but as a practical proposition.

While Paris is like a wheel, San Francisco is a wheel half cut off at the water front—the hub being the Ferry building. This is one of the most congested spots on earth; 50,000,000 human transits are made here every year. But here, where immense crowds gather and disperse daily, where all the carlines of the whole city converge, and where the cross traffic is also continuous and heavy, Mr. Polk proposed a solid stone triumphal arch and ponderous Roman colonnade, choking up at least 10 per cent of the going space already congested to the very limit!

So here, where we San Franciscans needed an area of architectural repose and beauty, the so-called experts prescribed traffic relief, and where our city cries aloud for the "bread" of traffic relief we are handed a stone—peristyle! Summa crassitudinis. Could any two propositions be more ridiculous!

Mr. Bennett's third mistake was due to his infatuation for pencil fantasias and his repugnance to facing facts and acting on them.

The architect, lawyer, doctor, or military commander who does what his client tells him is not of much value in a crisis. Mr. Bennett had a dozen suggestions for each problem, but no force to drive one home himself. Both he and Mr. Burnham yielded to Mr. Phelan in the matter of the Panhandle and the Public Library. When

block 73 on Van Ness was offered for the library it was clear that the Civic Center as I made it and Mr. Burnham endorsed it, would miscarry. At that time Mr. Burnham was in Manila. I wrote him long letters on the situaiton. I also called upon Mr. Bennett and urged him to go down to the Supervisors and make a stand, else the golden opportunity would go by forever. But Mr. Bennett didn't want "to bother with politicians" and was too indifferent to do anything.

Now, Mr. McCaleb had told me that Mr. Bennett didn't seem very keen about the Civic Center, "it was not his baby." Moreover, Mr. Phelan often went out to the Twin Peaks bungalow. Mr. Bennett told me this himself. I was dining with him one evening out there and wandering around looking at the sketches and calques hanging from nails on the wall. Suddenly Mr. Bennett called out, "Oh, I say, don't; don't look at those." They were long strips of tracing paper. Quite innocent of what could have no objection to this, only that long before, Mr. Phelan had assured me, to see what I can do with the Panhandle extension to Market street, with the library and Civic Center at the intersection. Of course, it's the wrong place to put it, but you know—" He seemed annoyed at being interfered with by Mr. Phelan. I surely could have no objection to this, only that long before Mr. Phelan had assured me, both verbally, through Mr. McCaleb, and later in his own handwriting, that he was "not wedded to the Panhandle scheme" (that is, its continuance in a straight line). But for this assurance I would not have made my plan at all. I could ill afford to give my time to any plans doomed in advance to failure.

At this juncture I realized that I must make my own fight for the library site, still, however, in conjunction with Mr. Burnham. I sent a man out to the bungalow, got back my big plan and took it down to the Supervisors—pinned it to the wall and explained, on behalf of Mr. Burnham, the whole situation. They should buy block 67 (or 66) and not block 73. But in default of a decision for 67 I begged them to wait a few weeks until Mr. Burnham should return. After a lot of wrangling I finally gained my point. They would wait until Mr. Burnham returned.

On Mr. Burnham's return I ca'led on him at the bungalow. Mr. Bennett retired and we had a long tete-a-tete—one I shall never forget.

First I asked him where he proposed to put the library. He took a billiard cue, or something like one, and pointed to block 67 (the S. half of the present City Hall). "This is the proper place—or" (pointing to 66, the N. half) "this." That was all I wanted to know. But Mr. Burnham had a good deal more to say. His manner was very gracious and friendly and I can remember almost exactly what he said. "Now, Mr. Cahill," he began, "when I go away from here back to Chicago, I shall want some one in San Francisco to represent me to look after this plan in the time to come, and—" Here I interrupted him. "Wouldn't Mr. de Young be a good choice?" "No, no, not Harry—No." Then I interrupted again. "Why not Mr. Brandenstein? He's very public spirited and independent." "No," he continued and he put his hand on my knee, "you are the man I want." I was so astonished I had nothing to say, but had I known Mr. Burnham better I should have said, "Here, quit your kidding." As a matter of fact I did not think for a moment that Mr. Burnham was sincere, but I couldn't tell him so. He said a good deal more, possibly my letters had impressed him with the fact that I at least was very much in earnest. Being himself a man of the world and immensely succesful, he was stalling me off for what was coming.

It came three days later at a full meeting of the Board of Supervisors, Mayor Eugene Schmitz in the chair, all the Supervisors and Library Trustees being present; also the Magees, representing block 73; Hooker & Lent for block 67; Messrs. Phelan, Burnham, Bennett and Polk, a priest from the Jesuit church, and a lot of visitors were present, so that the big hall was packed.

At length the great Daniel H. Burnham arose to give his judgment and a very pitiful "Daniel come to judgment" he was. He had a sketch made up overnight, showing an arrangement for using block 73, west of Van Ness at Hayes, and the Panhandle extended to Market street, etc. His voice faltered somewhat, but he was quite emphatic in giving his verdict and it was for block 73, in spite of his assurances made to me three days before, and in spite of his own published plan, which showed block 73 pierced by a boulevard leading to an opera house!

I was dumbfounded—and disgusted, but I resolved then and there that in future I would go it alone and fight the insincere Burnham and his ridiculous plans single-handed. Better far be beaten in front than betrayed from the rear.

To combat the Burnham or Chicago idea—which to me meant getting half-hearted and wholly interested people from outside to do in a feeble way what could be done much better by sincere, intensive work right here, I determined on a long, definite programme. "Delenda est Chicago" became my motto. I must destroy faith in this Chicago imposition. I recalled Willis Polk meeting me on Market street long ago and telling me that he was going to get his friend Burnham to come here and make a city plan. How well I recalled his parting remark, "Of course, nothing will come of it, but it will do no harm." Ipsissima verba.

REREDOS FOR CHRIST CHURCH, ALAMEDA
B. J. S. Cahill, Architect

DESIGN FOR CHURCH AND SCHOOLROOMS
B. J. S. Cahill, Architect

Opportunity soon came. One day a young man walked into my office and announced that he owned an architectural magazine—would I become editor. Mr. McCaleb and Mr. Willis Polk had both been approached, but I presume no deal could be made. I agreed on conditions. No advertising, nor any interference whatsoever should enter into my department, which was to cover so many definite pages, no more, no less.

The magazine, when I took hold, had a vulgar looking cover, and was a hopeless jumble of ads and cheap write-ups. I started with an article on Amiens Cathedral, which I had begun to prepare in Amiens itself, where, by the way, I paid my respects to M. Jules Verne. For January, 1906, I got out a number devoted to the work of Mr. Albert Pissis, the first of this kind to appear on the Coast. I intended to present the works of our architects as a protest against the idea that all the wisdom came from the East or Chicago. As a matter of fact, I showed what Mr. Croly showed afterwards—that San Francisco was ahead of the East in the movement that now dominates the whole country. I was preparing to write up Mr. J. G. Howard and Reid Bros., etc. For February I secured the whole Burnham Report from galley proofs furnished by Mr. Phelan, also the illustrations, long before the Report was officially printed. I was preparing a complete analysis of the whole plan, and the more it was studied the weaker it seemed. Ultimately I aimed at getting our architects to unite on a rational, workable plan after I had demonstrated the feebleness and visionary character of the offering from Chicago. In April came the earthquake and fire and our whole world was set back several years. Then again was tested out the law above stated. With everything swept away and "the minimum" of resistance, came also the maximum of paralysis to change anything, exactly as happened in Wren's day. We were glad enough to get back to our old status.

In 1909, however, the Burnham Civic Center idea was revived in conjunction with the idea of rebuilding the City Hall and an Auditorium. The Ocean Shore Railway—the road of a thousand blunders, as I christened it—made itself felt, as it had done before, and of course the Library, block 73, was then owned by the city. Mr. Burnham had so decreed it. When the bond issue was approaching, I wrote three articles in this magazine, one showing that the ugliest features of our architecture came from outsiders while our monumental work was home grown; another making a strong plea for a City Hall competition among our own architects, instead of inviting Chicago and all the world to come in and help us. In the June number I wrote regarding "The Bond Issue and the Burnham Plan—A Study in Panhandling." The article made three points: That it would be wasteful to buy a new site for the City Hall; (2) against a fundamental law of city planning to put an ornamental scheme athwart Market street; (3) that far better possibilities lay in developing the old site. To prove this I showed the plan of 1904 and a perspective of the same plan slightly revised—the plan of 1909.

The article advocating a local City Hall competition I had reprinted and distributed where it would do the most good. Ultimately the competition was actually confined to San Francisco architects exclusively and with notable success. The bond issue article I had printed to the tune of one thousand copies, which I sent to every editor, public official or property owner in any way interested. Moreover, I talked to the Commonwealth and Pilgrims clubs, the Technical Society and other gatherings and wrote to the daily papers on the subject, and had the plan on view at exhibitions and in a store on Montgomery and California streets. A friend tells me that, standing with a crowd of people on the sidewalk, someone said: "That looks to me like a fine idea." "Yes," said a bystander, "but Willis Polk says it can't be done." Quite so. I heard Mr. Phelan himself say at a Commonwealth Club lunch: "Nothing can be done with the old City Hall site." This absurd statement was repeated so often that people actually began to believe it.

Willis Polk went around lecturing and telling his audience that I was "a nuisance" and on the morning of the election, June 22, 1909—exactly nine years ago today (odd coincidence)—the Chronicle had an article headed "advertisement" and freaked with a double border, entitled "WILLIS POLK ANSWERS B. J. S. CAHILL," but as he foolishly and flatly contradicted himself he needed no answer.

The article contained the following sentences verbatim:

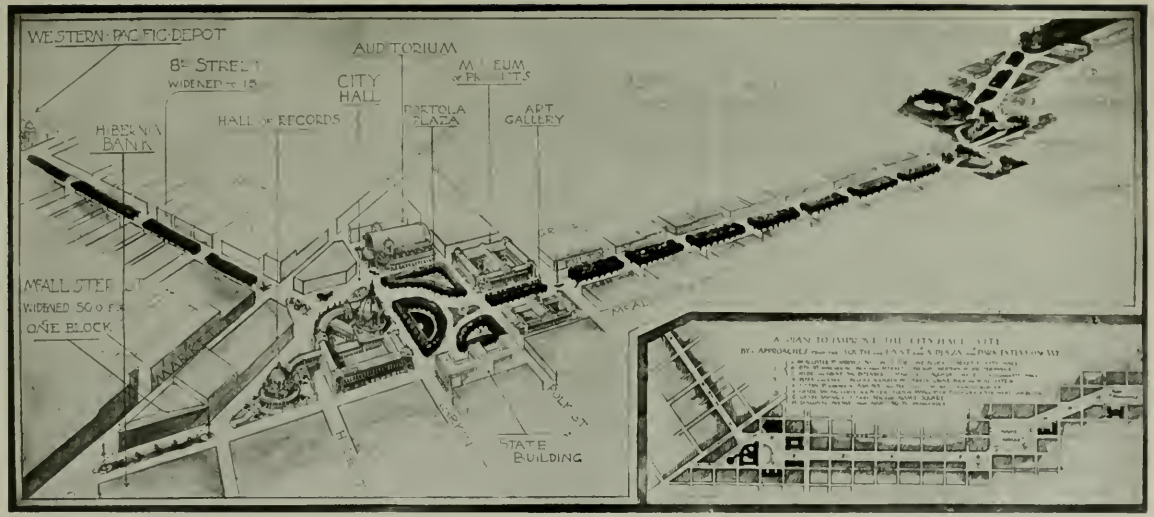
"Mr. Cahill's claim that he was the first to propose a Civic Center is correct."

"Mr. Cahill's claim that his scheme for a Civic Center, embodying the present City Hall site, was incorporated by Mr. Burnham in one of his preliminary plans is correct."

"Mr. Cahill's assertion that his suggestion covering the use of the old City Hall site was ever adopted by Mr. Burnham is not true," etc., etc.

The business office of the Chronicle told me that this ad space was rated at $300.

The bond issue was defeated and an evening paper said that I had defeated it. The Chronicle fought this bond issue, but on grounds of economy mainly. Its best argument, however, was that when the time was ripe a better scheme was available, and as



PLAN OF 1904 No. 2; REVISED 1909. It advocates: (1) the extension of Grove and Hyde streets (the latter under a bridge) to Marshall square; (2) Eighth street widened to 200 feet; (3) Portola Plaza, with lake, two blocks facing City Hall; (4) Ashfulton avenue on the western axis of the City Hall between Ash and Fulton, 223 feet 9 inches in all, carried as far as Fillmore street; (5) Fillmore crescent with monument site, one block; (6) a cut at edge of Alamo square; (7) a boulevard to the Panhandle and McKinley monument, three blocks diagonally. Total, ten blocks, excluding Eighth street and Marshall square widening. Maximum grade 4 per cent

Combining these plans of 1904 and 1909—they prescribe between them the following features, each one of which was adopted in the plan of the Consulting Architects of the Board of Works in March, 1912, and later carried out.

(1) *City Hall* on old site; (2) two blocks west of old City Hall made into a *plaza;* (3) Grove street extended to Marshall square; (4) Hyde street extended to Marshall square; (5) widened to yield same gore on Market street; (6) *Auditorium* to go on (7) Mechanics Pavilion block; (8) *Library* to go (9) on block 67; (8) Monumental building to go on (9) block 66; (10) *State building* to go (11) on half block north of Plaza; (12) Fulton street to be widened and connected ultimately with the Panhandle through Alamo square. By pivoting the City Hall and its opposite buildings with Fulton street widened, around 90 degrees, the plan remains as it has been carried out. But changing the City Hall site is an illegal proceeding and owners on Market street who bought from the city originally did so on the explicit understanding that the City Hall was to be built on the old site and no other.

I furnished the basis of this argument I am inclined to believe that I did actually cause defeat of this bond issue.

Having disposed of the insincere and wrongly placed Burnham-Phelan-Bennett Civic Center at Van Ness avenue, the next thing was to set in motion the proper propaganda for the original and logical plan at the City Hall site—the plan that finally won on its absolute and unassailable merits.

I wrote to the Merchants' Association and Mr. King, the secretary, wrote back to say that Mr. Andrew Davis, the chairman, president of the Emporium company, thought the matter so important that he wanted me to meet the whole board of directors at luncheon at the Fairmont Hotel on Friday, July 9, 1909.

With the big plan and perspective on the wall, I explained my ideas in detail. Among those present were Messrs. George C. Boardman, Gustave Brenner, Byron Mauzy, I. O. Upham, M. H. Robbins, R. H. Swayne and Frank J. Symmes. But the one man I feared more than all was Dr. Hartland Law. He was chairman, along with Mr. Phelan and Mr. Polk, of the Burnham Plan Committee. So I addressed my remarks solely to him. He showed no signs whatever of sympathy or appreciation, as did the others. When I had finished and answered questions and elicited quite a lot of general approval, Dr. Law opened up for the first time and quite astonished me by saying: "This proposition just explained to us seems to me a good one. The Burnham Plan has come to nothing and it's time we put that behind us and got action on this. As chairman of the Burnham Plan Committee, I move that this committee be dissolved and in its place I suggest another committee of three to select a commission of say twenty-five chosen from this and kindred bodies to take up this plan and push it through."

The motion was put and carried. The new committee consisted of Dr. Law, Gustave Brenner and R. H. Swayne. A spirited discussion followed as to the personnel of the commission of twenty-five.

When the meeting broke up I felt that the tide had turned again, and I certainly enjoyed "that grand and glorious feeling" that we read about.

I called on Mr. Davis several times after that. An election was pending, McCarthy was the new Mayor, and for reasons which I never learned the enthusiasm died out gradually and nothing came of the commission of twenty-five. I presume that the wrong candidate won the election. Mr. Crocker was defeated and P. H. McCarthy was elected.

In November, 1909, I went to Portland to plan the Multnomah hotel. Reading one day of Mayor McCarthy's ambitions to get a new City Hall, I wrote Dr. Law and got a short, vigorous letter, saying that the writer had been thinking of me and my "beautiful plan," suggesting that I come to San Francisco, "take up the matter with the Mayor and push it through to completion."

I got on the Shasta Limited for San Francisco that afternoon, but it took ten days before I could get an interview with the fourth Mayor of San Francisco that I had put it up to.

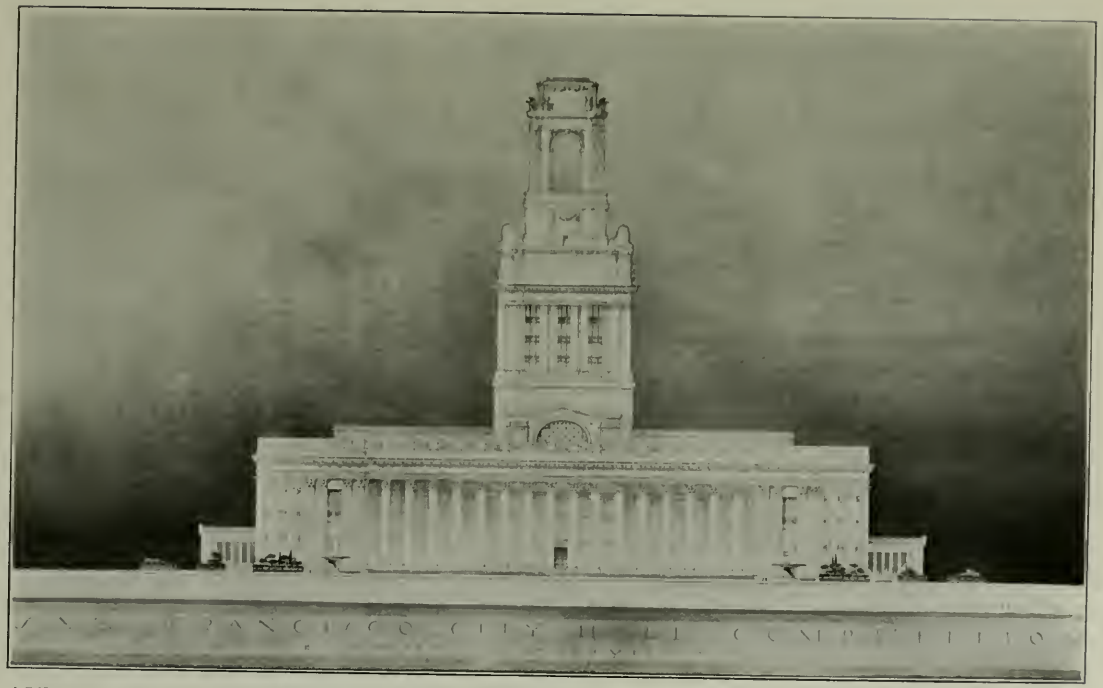
The Mayor, Mr. McCarthy, was very enthusiastic when I did see him and together we fastened the perspective drawings to the wall alongside his desk and there it remained, I believe, during the rest of his term, except for a day when it was taken out and photographed and a bromide enlargement sent to the London Town Planning Conference, to which I belonged, in October, 1910.

This was and remains by far the most important event of the kind ever inaugurated, yet not one single architect from the whole Pacific Coast joined it except Mr. E. M. Lazarus of Portland and myself. That is eight years ago and yet at that remote date I had published my first Civic Center plan, exactly eleven years previously—viz., October, 1899—and this, as I have explained in the beginning of this article, was in turn preceded by many years' study on similar lines.

My intense preoccupation in Portland precluded any more thought along lines where I had been so baffled with opposition, treachery and bad luck. Besides, I love the adventure of pioneering. By this time the field was getting crowded. City planning experts were shooting up over night. Every town in the country was developing a "Civic Center" and my part in the movement was ended—at least I thought so.

* * * * * * * * * * * * *

For very many years I have labored in odd moments on a literary work of vast scope and world-wide interest. For this I have been collecting material for twenty-five years, and on the morning of the earthquake a big sheaf of MSS. containing the outlines was the only thing I rescued. Another box of note books of a more philosophical nature I let go up in flames. And just as Mr. Warner's article on "Civic Centers" seemed the exact response out of the blue to what I was working on in architecture, so did a certain article published in the Monthly Review of London move me most profoundly on this political subject that had so engrossed me. It was entitled "On Thinking



DESIGN SUBMITTED FOR SAN FRANCISCO CITY HALL COMPETITION
B. J. S. CAHILL, ARCHITECT

Imperially," by one Moreton Frewen. I wrote a thirty-page typed answer, which I sent to the Monthly Review, London. In this I outlined my own ambitious programme. In a couple of weeks I was alarmed to get a cablegram from London, but it turned out to be a request for "leave to publish admirable article." I cabled one word, "Anonymously." Later I got the following letter:

Warwick Castle, September 19, 1905.

Dear Mr. Cahill:

I am greatly interested in and obliged by your letter and pray note it among life's strange coincidences that I wrote the paper you refer to so pleasantly at the St. Francis Hotel and in the Pacific Union Club, a few hundred yards from your office! I was there in February with my friend, Mr. Hays Hammond, and the spare half hours I employed in writing.

I am really delighted with your letter. It contains, indeed, all the chapter headings for a monumental work, and I hope that you may be spared to write it. I will promise you support and that it will come into the hands of the right reviewers. But we here are amazingly in the dark about our Empire, about the Federal principle, about the machinery that must be constructed. All we know, the people I meet at our West End dinner tables, about the Federal nexus we have learned from a novel called "The Conqueror," written by a Californian, Mrs. Atherton.

I have been asked by a few studiously minded people and reform speakers to publish the paper you "criticise," and I shall publish your letter just about as it stands. It will do far more good than my paper, to which it will form the appendix. It is lighter and brighter reading and strikes the high-water mark of hopefulness. It is a good campaign document. . . .

I sent your letter to my friend, H. A. Gwynne, editor of the Standard, also a copy of Country Life, with pictures of our pretty country home in Sussex.

Sincerely yours,
Moreton Frewen.

This Sussex home of the Frewen family, by the way, is illustrated in architectural text books. Queen Elizabeth once stayed here and left a green slipper behind which is one of the many interesting heirlooms of the place. Mr. Frewen is an authority on bimetallism, and a constant contributor to "The 19th Century and After"—the primate of periodicals, and, by the way, founded by an architect—James Knowles.

Mr. Gwynnes' letter follows:

The Standard,
Shoe Lane, London, E. C.,
September 22, 1905.

My Dear Frewen:

I have read very carefully and with intense interest the letter you enclosed from Mr. Cahill. I now return it. It is a long time since I have read a letter which has interested me so much. Indeed I could not resist taking it down with me to Kipling's this week, when I spent a day with him, and he was equally enthusiastic with myself. Would you allow me to write to Cahill and say that I have shown the letter to Kipling. I think it might encourage him in his self-appointed task. With kind regards.

Yours truly,
H. A. Gwynne.

A later letter from British East Africa told me of the wide interest the pamphlet had created. Earl Grey, the Governor-General of Canada, sent for a hundred more copies and told Mr. Frewen that my article had "stirred him to his depths," while Earl Dudley, the then Lord Lieutenant of Ireland, wanted to know the identity of "X" of San Francisco.

The big undertaking here outlined called for graphic statistics and maps of the whole world on one sheet. I soon realized that no world maps existed that were not grossly exaggerated or ridiculously distorted. To secure a world map in which all lands could be shown true to scale was an imperative necessity, so I tackled the problem of inventing a new rational projection myself. Of course, this was a mere episode in the magnum opus. But it was a task of extraordinary difficulty, involving long excursions into the realm of mathematics. Being an intense lover of geometry and an enthusiast on the subject of "form," I succeeded after five years, although I gave the problem up several times when it almost drove me to the verge of insanity.

The result was a complete success and so simple and geometrically symmetrical that I am truly thankful that I kept on trying in spite of failure after failure.

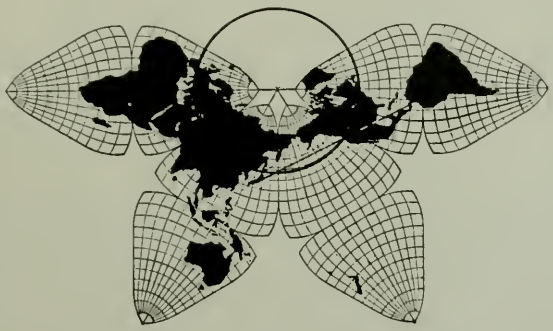
As a ground plan of the world true to scale and a problem in projection a picture of it is not out of place here. It is a step beyond town planning. It is country

planning—continent planning, world planning. The projection has been welcomed and endorsed by experts literally from all over the world.

It was published in Edinburgh, September, 1909. Among the greatest all-round scientists then living was Alfred Russell Wallace, the co-discoverer with Charles Darwin of the theory of evolution. This eminent man wrote me that he considered my projection "more accurate than any other yet attempted." The greatest German in the same class, Ernst Haeckel, of Jena, wrote me just before the war that he found my map "far better than the older attempts of cartographers," while the Scientific American pronounced it "The best attempt so far to map the globe on a plane."

But these high endorsements are quite unnecessary. A rubber globe that can be cut on three great circles, leaving the continents intact, and laid flat under glass without cracking the paint, and then can be released and assume the spherical form anew—such a device does not need scientific endorsement. It is its own endorsement. It shows the surface of the sphere laid out flat. Q. E. F.

The world war has delayed its publication, but at the same time increased its value to mankind by a percentage quite beyond calculation.



Plan of the world to scale on a projection invented by B. J. S. Cahill, F. R. G. S.

In the July, 1918, number of The Architect and Engineer, page 56, writing on Marine Architecture, I pointed out the absurd misconception formed by using Mercator's Chart, not as a sailing diagram but as a map or plan. I showed that the short line between Panama and Yokohama passed several hundred miles EAST of San Francisco. This sounded so absurd to the printers and proofreaders, accustomed of course to Mercator's misleading chart, that the word EAST which I had written was changed to WEST on the assumption that I had made a slip and meant to say WEST. If the reader is still in doubt let him take a globe and a piece of string and connect Panama with Yokohama by the shortest stretch, and he will find that this string line coincides with the line in the map above, passing EAST and not WEST of San Francisco, and this by several hundred miles.

Just as the map was made to suit the actual shape of the world, so was the Civic Center planned to suit the actual conditions of our city. Every point had been considered and the final diagram published, so that when Mayor Rolph came to take the matter in hand and architects were invited to send in their ideas, I merely walked over to Mayor McCarthy's office, got the drawing made three years before of the scheme worked out eight years before that, and turned it in with the rest. At first it was hung in a conspicuous place in Mr. Rolph's suite in the Merchants Exchange building—in the principal room. Next day I found it hung in the hat room behind the door, half of it eclipsed by a large overcoat.

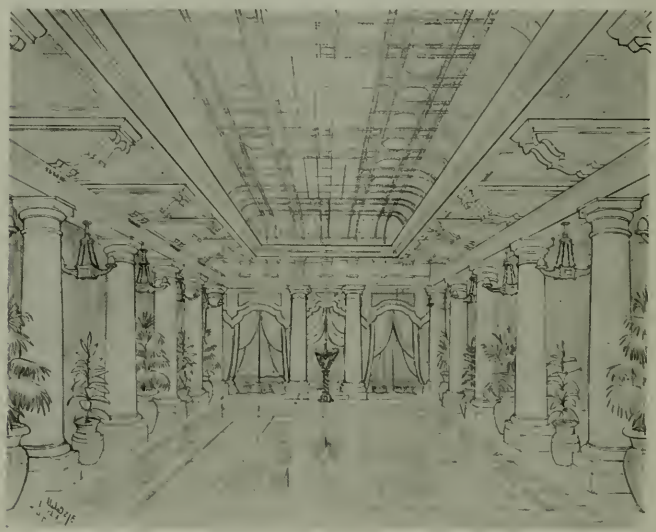
Several days were consumed by giving every architect a chance to explain his ideas, and they all differed from one another to an extent which was truly astonishing. I was the only one that deliberately refrained from saying one word. Party feeling ran so high that I thought this the wisest course.

However, when an Architects' Advisory Committee was finally appointed to make the selection, I took a photograph of my plan down to Mr. John Galen Howard, who was nominated with Mr. Faville, Mr. Ward, Mr. Polk, and Mr. Bennett for this purpose. As president of the Chapter I showed Mr. Howard my indictment of the Portland Auditorium award, one of the most scandalous judgments ever awarded on the Coast. Mr. Howard was wholly in sympathy with my position in this. Then I explained the Civic Center, giving my reasons for every point on the plan, the condensed result of very many years' study. Mr. Howard said he knew nothing of the Civic Center movement, having recently returned from the East. He followed my remarks with great attention and keen interest point by point. When I had finished he asked if he could have the plan. He rolled it up and put it in his overcoat pocket. Then he said: "Now I would like you, as soon as possible, to write down in short, clear statements the various points you have just made about this. Will you do that?" I said I shou'd be most happy. He then invited me to luncheon, and as we sat in the Palace Grill I told Mr. Howard a great many things about the history of the Civic Center which he did not know.

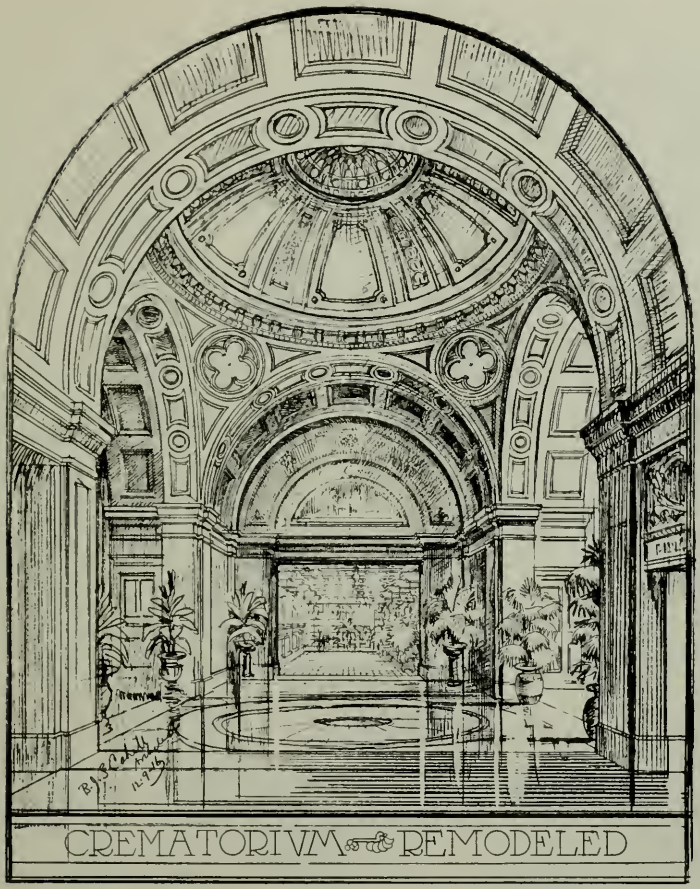
A few days afterwards Mr. F. W. Jones, the editor of this magazine, told me that my plan for the Civic Center had been adopted. I called on Mr. Faville, who told me the same thing. "But," he said, "Cahill, you had better stay in the shadow for the present and when the storm of opposition has blown over you shall come out in the light and get full recognition." But I never got it. In all the articles written by Mr. Howard or others of the triumphant triumvirate who were finally chosen and well paid to carry out and develop the Civic Center plan not one has ever made the remotest allusion in any way whatever to the real author, originator and creator of the San Francisco Civic Center!

The following extract is from the Chronicle of January 14, 1912, accompanied by a cut of my perspective and plan:

"How closely the favored plan for the Civic Center follows the studies made by Architect B. J. S. Cahill several years ago may be seen from the accompanying picture, which is photographed from a drawing made by Cahill in 1909 but in reality a copy of a former study completed by Cahill in 1904.



PROPOSED CREMATORY CHAPEL, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect

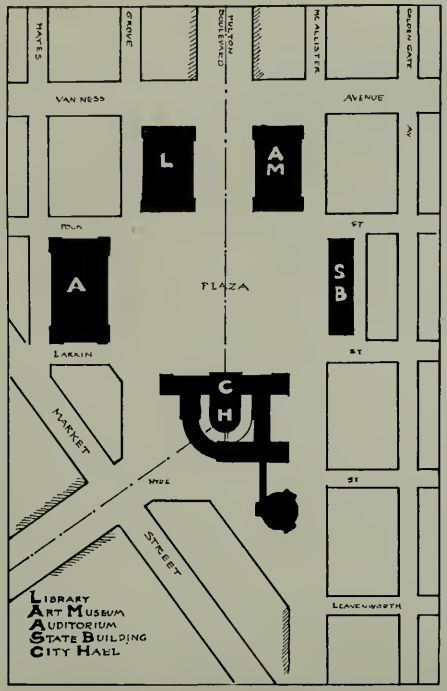


CYPRESS LAWN CEMETERY B. J. S. Cahill, Architect

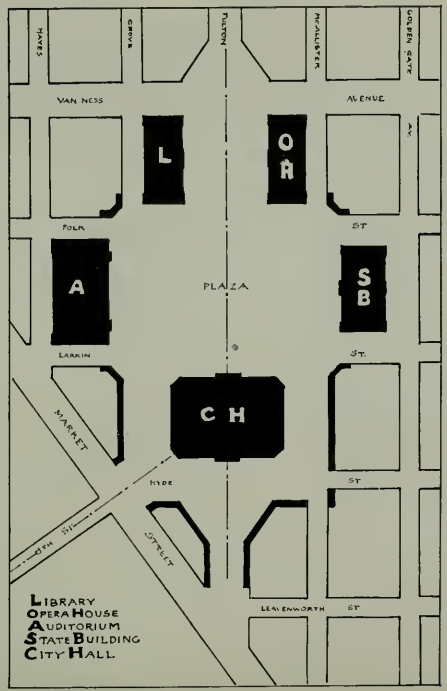
"While the committee of architects was engaged in its work on the Civic Center," W. B. Faville said, "we secured Cahill's studies, which were practically adopted. Owing to the fact that the site had been the subject of discussion (!) at a former time, Cahill thought best that his name should not be mentioned while the matter was under discussion."

"For this reason Cahill took no part in the public discussion of the Civic Center site, although he was present at the hearing before the Public Buildings Committee on Wednesday night, at which nearly all the architects who spoke expressed their approval of the grouping of buildings and Panhandle scheme which he had devised several years ago. It now appears that while some of the other plans submitted were the result of days of study, the plan which has found general favor is the result of years of work.

THE DEADLY PARALLEL



CIVIC CENTER PROPOSED BY B. J. S. CAHILL, 1904-1909



CIVIC CENTER PROPOSED BY THE CONSULTING ARCHITECTS, S. F. BOARD OF WORKS, 1912

Read before Board of Supervisors by Mr. Faville

San Francisco, January 6, 1912.

My Dear Mr. Howard—

Before seeing you yesterday, Mr. Faville told me how you were going at the C. C. problem. I cannot get over one statement. That you were plotting out the ideal solution for each several site irrespective of legal, political and property considerations that might modify (perhaps nullify) the ideal, etc.

I say this is very bad medicine.

Does your tailor cut your suit for an ideal figure and then make the fit afterwards? Does a portrait painter sketch first an ideal woman and then make it over into Mrs. Whatever her name is? Did you or I or any one ever make an ideal home plan and make it over to suit the plot position or owner's purse? We know, all of us, much better. It is the situation, orientation owner's whims, view, grade, limits of lot—all these things that **are** *and make the plan—the home itself. It is born entirely of conditions and limitations.*

And again, do not make an unattainable plan, that has to be clipped, maimed and crippled. Why not face all the conditions at once—public finances, popular prejudices, even legal snags—everything—put all in the melting pot and give us a fine fused result, expressive of the time and people of the time, limitations and all?

You know absolutely and cannot deny that there is no other receipt for any building you have to plan; then why not for the Civic Center?

Beware also of the "picture" plan so much over-employed by the "schools." Also the hypnotic mesmerizing obsession of geometry on the mind of any man using T square and angle.

I myself have stood for hours and hours dazed and enslaved by the "lure of lines" dominating my plan, in the end all to be wiped out by some actual necessity obtruding itself across the face of my ideal creation.

All the great groups of buildings in the world are entirely different each from the other and none of them when reduced to a small scale plan arrange themselves as a perfect pattern when carried out, though many were so conceived.

And all the charm of all the most fascinating cities lies in the unexpected and almost erratic formation in the well known beauty spots.

Let us not have a draftsman's Civic Center, prigish and pedantic, stiff, schooly, machine made, perfect and tiresome!

But above all, don't break into Market street.

This letter should have been sent to Faville. Please hand it to him.

Believe me.

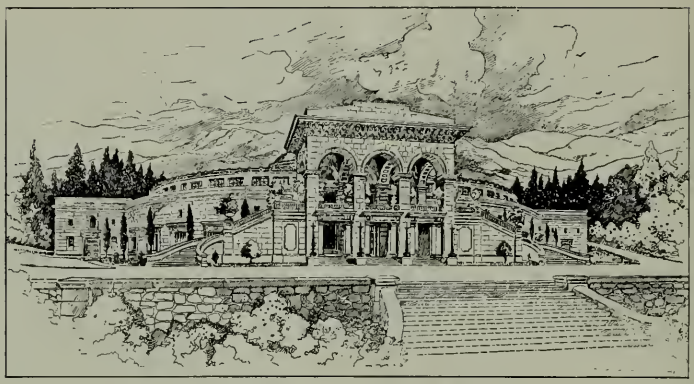
[B. J. S. CAHILL]

Compiled and sent to Mr. John Galen Howard at his request after giving Him copy and describing the Civic Center Plans of 1904-1909

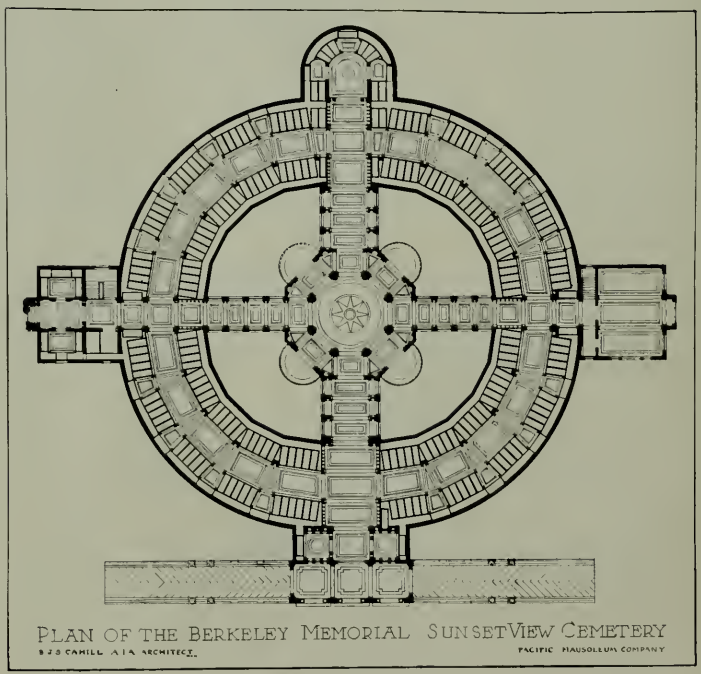
NOTES ON CIVIC CENTER—B. J. S. Cahill

1. *Origin of phrase and definition—Plan of 1899, 1904, 1909, 1912.*
2. *Misconception—not the topographical center—there can be several civic centers.*
3. *A large public building the logical nucleus in all cases.*
4. *On this unit other units can be developed more easily and more effectively than on any other. A "dead" building deadens realty values.*
5. *Nothing more effectively stops retail development of a street than a park put across it.*
6. *Thus, both commercially and esthetically one large building attracts another.*
7. *The business of the intelligent city planner is to promote and encourage this development.*
8. *That any one mind can foresee the growth of a great city in a free community or lay out its future course, even for a generation, is nonsense.*
9. *All attempts to fix the future growth in the outlying, cheap and undetermined parts of a city is wasted time.*
10. *The city planner's duty is not to be vague and suggestive as to roads and boulevards in a large and comprehensive way, but*
11. *To be intensely definite and clean-cut in the expensive and congested parts in as economical and compact a manner as possible.*
12. *Cities develop "along the lines of the greatest and not the least resistance," that is, they are changed structurally along these lines, beginning at the congested center and not at the sparsely settled edges.*

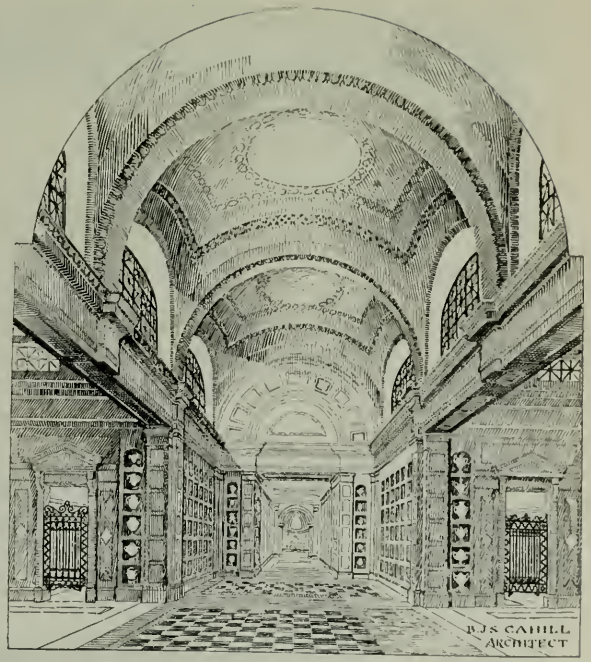
1. *Plan presented does not touch an inch of Market Street.*
2. *The Civic Center, being an area of repose, should never be planted on or across an artery of action.*
3. *This, not for esthetic reasons, but because such an attempt to injure vested interests arouses militant opposition.*
4. *All drawings and plans that do not look to a reasonable chance of immediate realization are a waste of time.*
5. *The old City Hall lot is used because it cannot legally be sold. It was dedicated by both State and Municipality for the purpose of a City Hall. The dedication to that end was opposed at the time by Michael Reese, Samuel Brannan, Richardson and others from the north end of town, and the work of constructing the then new City Hall was stopped by injunction. Consequent delay and litigation lasted two years, in which period no work was done. At the end of this period, the dispute was ended by a decree of the Supreme Court, which held that the dedication of the land for a City Hall building was "irrevocable"—There was no reservation even of the right to revoke the dedication. (Cal. Reports 1871-1872, Vol. 42, P. 541.)*
6. *If the lots were sold they would fetch strictly buyers' prices, because the cloud on the title would stay for perhaps a generation or more.*
7. *The theory that a City Hall is better on several lots or several pieces has no foundation in fact. This amusing theory was disseminated by the champions of the Van Ness and Market Street site for no other reason but that they were unable to get a new lot as large as the one they proposed to abandon.*
8. *The Park extension west, between Fulton and Ash Streets, has no steeper grade than six per cent on one block and three and three-quarter per cent through Alamo Square. The grade is continuous and has no dips.*
9. *This connection with the Park is superior, from an artistic, economical and scientific viewpoint, to the direct continuaton of the Panhandle between Oak and Fell Streets.*
10. *Values around the Park area west of the City Hall will go up immediately in advance of the selling value today, but thereafter, say ten years, the surrounding property will tend to leave this district behind. In other words, a public building and square once established will first raise and then sustain values at a fixed standard almost indefinitely. Prices, in other words, will not tend to soar.*
11. *An equitable lease with the Mechanics' Institute will obviate buying an auditorium site.*
12. *The Library site owned by the city (Block 733) will be much more valuable in fifty years' time than any block around the Civic Center excepting the one nearest Market Street. It can then be sold by the city. At present it could be leased.*



MAUSOLEUM, SUNSET VIEW CEMETERY
B. J. S. Cahill, Architect



MAUSOLEUM PLAN
B. J. S. Cahill, Architect



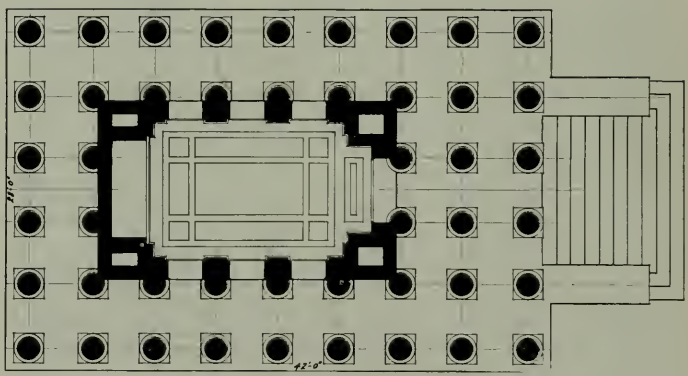
PRIVATE VAULT AND VIEW OF INTERIOR, BERKELEY MEMORIAL B. J. S. CAHILL, ARCHITECT
Drawn for the Pacific Mausoleum Co. of Anaheim and Oakland

THE HALLER MAUSOLEUM, HOLY CROSS CEMETERY
B. J. S. CAHILL, ARCHITECT

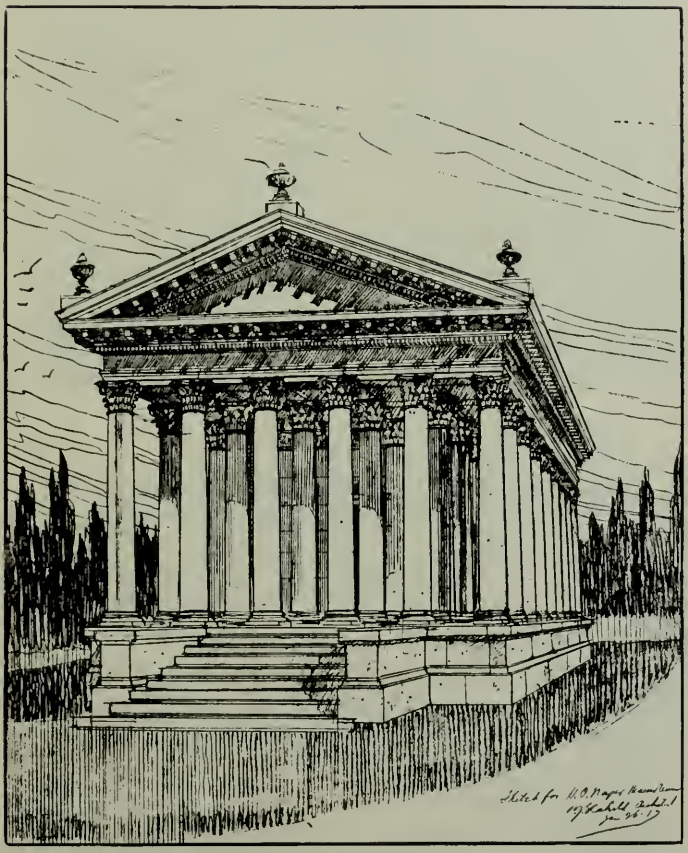
NEW OFFICES AND TERRACE, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect

MAUSOLEUM AND COLUMBARIUM, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect

SIDE ELEVATION, NAGER MAUSOLEUM, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect



PLAN OF NAGER MAUSOLEUM, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect



PERSPECTIVE SKETCH, NAGER MAUSOLEUM, CYPRESS LAWN CEMETERY
B. J. S. CAHILL, ARCHITECT

Exterior

Interior

DAVID HEWES MAUSOLEUM, MOUNTAIN VIEW CEMETERY, OAKLAND
B. J. S. Cahill, Architect

CURTIS MAUSOLEUM
East Lawn Cemetery, Sacramento B. J. S. Cahill, Architect

DOHRMANN MAUSOLEUM
Cypress Lawn Cemetery, San Francisco B. J. S. Cahill, Architect

INTERIOR, COLUMBARIUM, FRESNO, CALIFORNIA
B. J. S. Cahill, Architect

PROGRESS PICTURE, EVERGREEN MAUSOLEUM
Haven-court, Oakland B. J. S. Cahill, Architect

Entrance to Terrace Tomb Room

South Main Entrance

Evergreen Cemetery, Havenscourt, Oakland — PROGRESS PICTURES, EVERGREEN MAUSOLEUM — B. L. S. Cahill, Architect

Cahill's studies are now in the hands of Supervisor Bancroft, chairman of the Public Buildings Committee, which is to make its report to the Supervisors on Monday. . . .

"One particular in which Cahill's plan for the Civic Center differs from the published drawing submitted by the committee is that Cahill included only half of the block bounded by McAllister, Polk and Larkin streets and Golden Gate avenue. As this block is divided by an alley, he thought that the half fronting on the proposed Plaza would be sufficient. As the other half has been improved by the erection of two or three substantial buildings, the acquisition of this would only add to the expense."

This is a good example of the "limited vision" attributed to me by Mr. Polk in the same newspaper some years before. On January 16, 1912, the Chronicle printed the following:

CIVIC CENTER CHOSEN BY VOTE OF BOARD.

"One by one the remaining adherents of the Burnham Plan Civic Center among the Supervisors signified their intention of voting with the majority for the administration plan, which is practically that offered by Architect B. J. S. Cahill several years ago.

Willis Polk appeared as the sole remaining defender of the lost cause, and sang the swan song of the Van Ness avenue and Market location."

Reasons for the Choice.

"The reasons recited in the report for the site decision were the majority decision of the architectural advisory committee, the convenience of the location, its spaciousness, the opportunities for fitting approaches and vistas, the possibility for monumental elevations; that it did not involve the purchase of lands on Market street; that it offers the best solution of the Panhandle extension problem; that it is slightly removed from the noise of traffic, and that it will cost less than the Van Ness avenue proposal."

All these points were those I gave to Mr. Howard and a letter ostensibly from an anonymous source, but really written by me, which was read before the board by Mr. Faville. Both these documents are here printed for the first time just as they were originally written.

So far, triumph once more, not personal triumph, but victory for one great idea I had worked so hard and for so many years to get realized.

Far less vital, to my mind, was any material reward. Although I certainly expected to be put on the Civic Center Committee and called on Mayor Rolph about it. He said to me that the selection of the architect or architects was entirely in the hands of Mr. Bancroft, president of the Chapter. I called also on Mr. Howard, who gave me, I think, one of the greatest shocks of my life. His exact words I do not recall—I was too amazed—but it amounted to this, that my interest in the Civic Center was purely a matter of opinion, meaning clearly enough that in his opinion I had no interest in it whatever. To top this climax, within a week Mayor Rolph himself picked three architects to carry out the Civic Center. The first was Mr. John Galen Howard, the second was the Mayor's brother-in-law, just from the schools, and I was NOT the third.

Thus the matter ended with complete victory for what had been so many years to me The Great Idea, but with complete failure for me personally.

* * *

From these turbulent adventurings in the monumental I come with a sense of relief back to the smaller ones in the beautiful seclusion of our peaceful cemeteries.

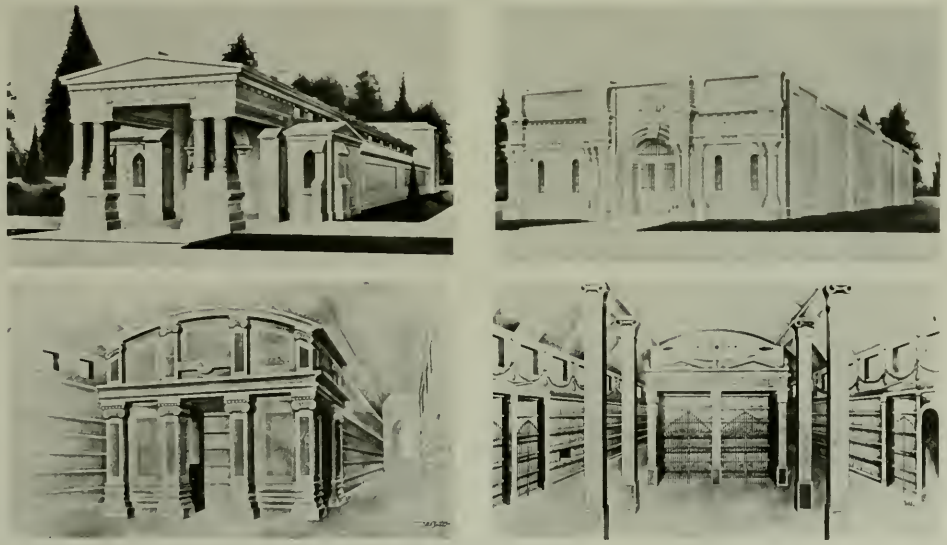
A monument to the dead calls for finer architecture than any other structure. And, oddly enough, as though architectural design followed the law of the greatest resistance also—one finds actually worse work done in cemeteries than in cities.

Many of the community mausoleums erected in the last few years are not so much architectural aberrations as architectural atrocities.

Thomas Carlyle makes an amusing point in Sartor that there is some sort of a distinction of a black negative kind in being an extreme example in any direction. In the matter of stupidity, for example, there is, he says, the one individual being who is actually "the stupidest man in all London." I give on one page here the four most atrocious designs ever perpetrated. I defy any one to show anything worse. They are so bad that they inspire a sort of awe. And they are actually constructed.

Therefore the claim I put forth that I have succeeded in elevating the standards of mortuary architecture is one not lacking in due modesty.

On the other hand, our Mr. Irving K. Morrow, whose critical writing are always worth reading, has defined with consummate neatness the type of monumental fakir whose sole equipment consists of "catalogues and effrontery." Without any knowledge either of construction or design, and with a sole eye to what is too often prodigious personal profit, these ghouls of the graveyard are at once desecrating the dead and looting the living. To the abatement of this nuisance I have also dedicated such industry as I can command, to the end that the "monument man" may be driven to other fields and his place taken by the monument architect.



ARCHITECTURAL ATROCITIES
Mausoleums—Somewhere in America

A Concrete Motor Boat

ALTHOUGH concrete is now being used extensively for large boats, the possibility of using it for motor boats has been somewhat dimmed owing to the excessive weight of the hull and the lack of flexibility necessary in small craft for the general use of the contractor. These objections are probably not as serious as first anticipated, and appear to have been successfully overcome by a type of construction explained in the following article appearing in the Engineer. The actual boat in question has a displacement of 28 tons on 4 ft. draught, and she weighs only 8½ tons; she is, in fact, so lively that we could rock her easily by standing amidships and swaying from side to side. With regard to the question of resiliency, we cannot, of course, speak from any experience or any tests we have been able to make—the sea-going test is, of course, the only thing that will set the point definitely at rest—but the details of construction do appear to us to afford every hope of satisfactory results.

The keel, which is bent round up to the stem head and over the bow chock, consists of a flat mild steel bar 2 in. by ¼ in., which is connected to a 1⅛ in. diameter keelson, which runs right fore and aft by a number of flat bars or clips, 1 in. by ⅛ in., which are riveted into the keel and clipped over the keelson.

There are two ½ in. diameter mild steel bilge stringers, and then three more stringers, one acting as a gunwale and two at intervals just below, and two deck stringers on each side, which carry the deck as far as the hatchway openings. The frames consist of ½ in diameter mild steel rods carried continuously right around the hull from coaming to coaming, and clipped to the keelson and joggled to receive the stringers. The frames are then faired up just as the mould timbers of a wooden boat would be, and on these surfaces is laid a covering of expanded metal in plates 8 ft. by 2 ft., wired to all the frames and the stringers. When this inner skin, so to say, is complete, the garboard strake of an outer expanded metal skin is laid on and wired up, being separated from the inner skin by a series of ¾ in. concrete distance pieces.

Concrete of 5-2 mixture sand, washed through a ¼ in. sieve, is then rammed in between the two layers of expanded metal, the concrete which exudes from the metal being added to and wiped smooth on each side, so that a skin 1½ in. thick is produced. The next strake of metal is then wired on and the ramming proceeds until the whole is finished, the job being continued night and day until completion.

The fact that the concrete is only rammed in 2 ft. depths should result in a really well compacted monolithic mass, and the design should give strength, although it is, of course, difficult to carry mental vision from a 40 ft. by 80 ft. 6 in. by 4 ft. 9 in. launch to a 400 ft. ship on the same general design. One thing that we did note is that the bulkheads, which are solid for the whole beam and depth of the boat, sound resilient, and give out quite a reverberation, and not at all a dead sound.

The engine is a four-cylinder high-speed car type motor, so that we had no opportunity of judging the effect on the hull of one of the single-cylinder slow-speed, heavy type engines, which would more ordinarily be used in such a boat. This engine, which is of 25 horsepower, is stated to be capable of giving the boat a speed of 8½ knots when light.

THE FAITH BEFORE LEAVING THE WAYS FOR HER INITIAL BATH

Concrete Ships

By FREDERICK JENNINGS

ALTHOUGH concrete ships, or to be more precise, concrete boats, have been known since as early as 1849, it is only within the last few months that the world has looked upon the possibilities of this type of construction for water craft with any degree of seriousness. Frequent drawbacks have developed to keep the industry in the background and nobody seemed to care to come forward with a design backed by the confidence of its builders. It remained for San Francisco engineers and business men to demonstrate to the world that a concrete vessel is practical, and while there still are problems to be overcome before this type of boat can be given the same consideration as steel and wooden vessels, nevertheless a real beginning has been made and Uncle Sam has shown his confidence by placing millions of dollars at the disposal of able engineers and builders, that they may experiment and eventually perfect a type and standard of boat that will furnish an emphatic answer to the world-wide cry for ships and more ships needed to sound the death knell of the Kaiser.

The 5,000-ton concrete steamship, Faith, has made good beyond expectations. She has beaten the anticipated speed; reduced vibration below that experienced in other ships; is easily handled and has inspired confidence that the concrete ship may prove not only the Kaiser's coffin but a tremendous factor in commercial enterprise.

The Faith was launched March 14th at Redwood City, California, and towed to the yards of the Union Iron Works, where she was fitted with engines ready for trial in 42 days, a remarkable and unprecedented record.

According to Mr. W. Leslie Comyn, president of the San Francisco Shipbuilding Company, builders of the Faith, the vessel recently steamed a distance of 241 miles during a twenty-four-hour stretch. As the ship is loaded it is considered that the vessel is living up to all expectations, for this is nearly as good time as that made upon the official trial trip when the holds were empty.

Writing on the life of a concrete ship, a contributor to the Engineering-News-Record says:

The life of a concrete ship depends, more than on any other thing, on something about which we have little knowledge; that is, the ability of the hull to withstand the rack and the wrench of the sea, the terrific strains and twists imposed on a rigid structure under reversal of stresses and suddenly applied loads. Computations of great elaboration based on the best naval architectural knowledge of the day have been made to take care of just these conditions of stress. Scientific foresight has done its best, but so far our sole practical information on the subject is the behavior of the Faith on its exceptionally rough voyage up the Pacific some weeks ago. Minor defects, due to obviously weak design, appeared, but structurally it survived this most severe test and as a ship it received the commendation of the Lloyds agent who was aboard.

Possibly one of the new concrete ships will break its back in its first storm. Steel ships have been known to do so. Possibly, but hardly probably, it may make its first port with so many and serious cracks as to incapacitate it for future service. But these things will not mean a life of one to three years; it will be a question of days or weeks. Assuming the ability of the ship to stand up under such conditions, the good concrete we now know how to make should guarantee a ship's life of indefinite length.

Sea water has had a deteriorating effect on certain concretes in the past, but, properly made and protected, no such trouble is to be anticipated in ship concrete. Such concrete must be made dense to attain the necessary high strength. It is not subject to abrasions which will expose the steel or the possibly vulnerable sub-surface concrete, except in above-water parts which are readily inspected and repaired, and it will be protected by a surface paint. Furthermore, there will be some of our anti-corrosion coating on the steel. In the light of our present knowledge, these precautions assure its immunity from saline attack, always provided that the concrete is a first-class product.

Concrete ocean-going ships are radically new, and all new things in engineering must ultimately stand or fall on their behavior in service. So far as theory goes, it can now be definitely stated that the concrete ship can be designed more accurately than has been the custom with the steel ship. As for practice, in one case at least a concrete ship has been built that can withstand the battering of high seas. While one would be rash indeed to insist on the impossibility of its failure, no one can restrict its possible life to a short and definite term of years, and certainly no one can predict its failure from disintegration within a period of economic use.

* * *

The following opinions expressed by Mr. R. J. Wig, of the Bureau of Standards and chief engineer of the Division of Concrete Ships, are of interest:

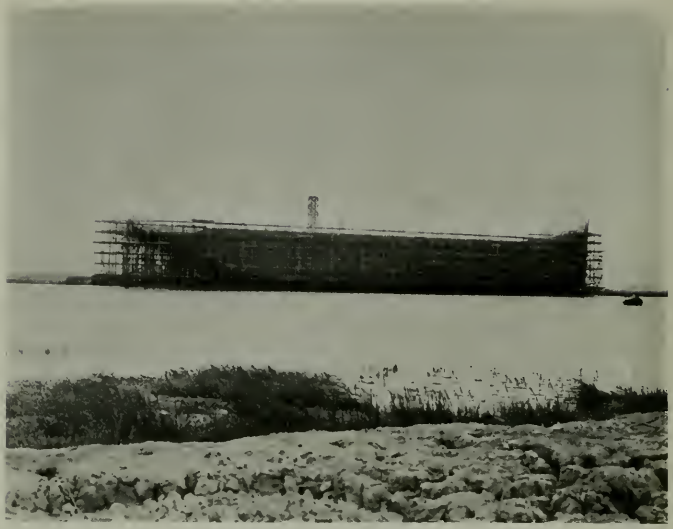
We here in this department do not think the concrete ship may be classed as an experimental ship any longer. We think that the reinforced concrete ship is structurally just as sound as the steel ship, and that the conclusions based on our investigations will be borne out when observations may be taken from concrete ships actually under service.

The one thing we know the least about is its durability. We know that damage by the salt water of the sea need not be feared for three years, if at all. This conclusion is based on examination of all the concrete structures in sea water of the Navy Department for a period of three years. I helped to make this inspection. We know, too, that one concrete ship has been in operation in sea water for one year. That is the Namsenfjord of Norway. Tests show that the sea water has had no damaging effect.

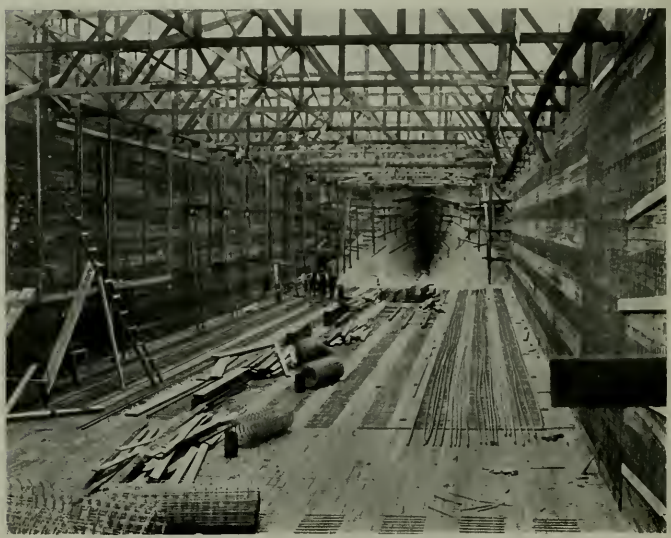
Another concrete vessel much smaller than the Namsenfjord has been tested in salt water considerably longer. This is a little steamer built in Boston three or four years ago. It is only 43 feet long. The hull is of cement mortar, and after contact with salt water for three years is in practically perfect condition; nor has there been any cracking of cement.

THE FAITH ON ITS MAIDEN TRIP TO SEATTLE

THE FAITH, FULLY RIGGED, UNDER HER OWN STEAM



THE FAITH, BEFORE CONCRETE FORMS WERE REMOVED



THE FAITH UNDER CONSTRUCTION, SHOWING METHOD OF STEEL REINFORCEMENT

A torpedo would blow a hole in a concrete ship just as in any other kind of ship, but it would not crack the hull, as some seem to have thought. The concrete is not fragile like a bowl; it is tough, due to the reinforcing steel.

The concrete ship costs about two-thirds as much as steel. Concrete ships can be built in much larger numbers than ships of steel or wood, mainly because the concrete vessels do not require a large plant installation and because the material is readily available. Even a small steel ship plant costs $500,000. On the other hand, a concrete ship plant can be built for $15,000. It may be made so as to be portable. The principal machinery required is a mixer, a hoist and a derrick.

* * *

The historical side of concrete construction in shipbuilding is interesting. The first knowledge of concrete shipbuilding dates back to 1849, at which time a small concrete vessel was built in France. It is still in service. In 1887 the Dutch began to build concrete canal boats with a capacity of eleven tons; they now build them sixty-four feet long and carrying fifty-five tons. In 1889 an Italian at Rome, Carlo Bagelline, commenced to build concrete barges and scows. Some six years later he built for use in the port of Civita-Vecchia, on the Mediterranean, a barge of one hundred and fifty tons capacity. In 1909 he was building reinforced concrete ferry boats for the transfer of cars. These floats are one hundred and fifty feet long. About this time the Germans copied his example and at Frankfort on the Main a two hundred and twenty-ton freighter was constructed. About 1900 there was a concrete schooner engaged on the Atlantic in coast trade. In 1910 there was built for use on the Welland Canal to carry rubble a barge eighty feet long with a seven-foot draft. This is still in use and this in spite of the material it has been engaged in carrying. General Goethals in building the Canal used concrete barges in 1911 capable of carrying five hundred tons of sand and gravel. They are also in steady use in the Manchester, England, ship canal. In 1912 a five hundred-ton barge was built at Baltimore and has been in constant service carrying sand and gravel on Chesapeake Bay.

To the Norwegians belongs the credit of building the first concrete seagoing vessel, the Namsenjford, a freighter. She is only four hundred tons dead weight capacity, but the principles adopted in her construction will apply to larger vessels. She is self-propelled but her inventor claims that he can build engine-driven vessels for freight in three months with four thousand tons capacity. Mr. R. J. Wig, chief engineer of the Department of Concrete Ship Construction of the U. S. Shipping Board, and who came to the Pacific Coast from Washington to accompany the Faith on her trial trip, reports the development of concrete ship construction abroad and tests the British and French programs as follows: England 140 barges of 1000 tons each and 24 tug boats. France 700 barges of 1000 tons each and fifty tugboats. These programs are already in advanced stages of completion.

* * *

Brush-Finishing Concrete Surfaces

A finish for concrete that will give a uniform and very satisfactory surface is produced with a whitewash brush as the finishing tool.

Remove the forms at the earliest possible time—paint the surface with a grout of 1 lime, 2 cement and 3 fine sand, mixed with water to a creamy consistency and kept thoroughly stirred.

Follow the application of the mixture with a thorough rubbing of the surface with a wood float to fill thoroughly all pin holes and produce an even texture.

As the excess moisture disappears brush the surface lightly in both directions with a dry brush to obliterate all float marks and produce a sandpaper-like texture. The surface thus treated will be very light in color and the effect is permanent under most conditions.—Concrete.

CONCRETE SEA-GOING VESSEL FOR COASTWISE TRAFFIC IN SCANDINAVIAN WATERS

Concrete Boats a Transportation Asset*

By J. F. SPRINGER

THE problems introduced or made pressing by the war, focus, many of them, upon transportation and material. As to transportation, the railroads, particularly those in the East, are more or less overburdened. Some relief can undoubtedly be gotten by means of our interior waterways. The Great Lakes, the New York Barge Canal, the Mississippi river, the navigable rivers like the Ohio which empty into the Mississippi, and other waterways afford us practicable routes over which raw materials and manufactured articles may be transported from interior points to tidewater or from interior points to interior points. We have a pretty extensive system of such waterways that are either ready for use right now or will be shortly. The problem of using them centers largely upon the problem of quickly constructing both self-propelled and tow barges and similar boats. But suitable lumber and suitable steel are scarcely available in quantity. Here is where concrete comes in as a possible solution or aid to the solution of the fundamental transportation problem.

Similarly, with respect to ocean borne traffic. The submarine situation, combined with other matters, has developed an acute need for cargo vessels. Steel and wooden vessels are being built. Still the demand is not quite met. So, here again, concrete presents itself as a material which may be utilized in the solution of the problem.

Portland cement is the one and only constituent of concrete that may prove difficult to obtain. Sand—the United States is full of sand. Rock—there is no end to the rock. But Portland cement has to be manufactured out of certain materials more or less abundant pretty much all over the coun-

*American Industries.

try. Whatever problem may arise will arise probably in connection with the capability of the mills making cement. There is plenty of the raw material, but the mills must have fuel to heat certain materials and they must have a considerable total. Even transportation affords but a minor problem in connection with the use of Portland cement in the construction of vessels. One State, Pennsylvania, produces nearly 30 per cent of the Portland cement output. And the bulk of her mills is close to tidewater. The question of ships is limited almost to the question of the coal supply. Now, it is to be taken almost for granted that the Fuel Administration will not fail to see that coal must be supplied the cement industry for the purpose of speeding up our construction of ships and barges, seeing that inland and ocean-going transportation may be tremendously helped.

There is one other thing that must be supplied, not for the purpose of making concrete, but for the purpose of converting plain concrete into reinforced concrete. Steel, usually in the form of bars and rods, is employed in structural concrete construction—whether of bridges, buildings or ships—for the two-fold purpose of lessening the amount of concrete otherwise necessary and of lending concrete a quality in which it is deficient. Concrete is strong under pressure, as when used for foundations, but is not strong under a stress tending to stretch it. Steel has this quality—tensional strength—and is for that reason associated with concrete. The general purpose in arranging this partnership is for the concrete to perform the duty for which it is adapted and for the reinforcing steel to step in automatically and take the tensional stresses. It is *reinforced* concrete that is used in shipbuilding. The places where concrete alone could not be used, because of the defect mentioned, are satisfactorily occupied by reinforced concrete because of the imbedded steel. The places in a ship where concrete could be used alone are occupied with a lesser weight of material when reinforced concrete is used. Some restricted quantity of steel is required, then, in concrete ship construction.

The Government must, in view of the foregoing facts, be content to give the Portland cement industry, in so far as it is connected with concrete ship construction, all the coal it needs; and to allot to concrete shipbuilding interests all the steel they require. True war economy is probably served by such concessions. In fact, there are abundant signs that the Government is going in for concrete ships on its own initiative. This seems very sound policy. But it happens to be a policy just about as sound to favor the construction of concrete vessels for private account, because of the additions thus secured to the transportation facilities.

The "Faith," a 5,500-ton steamship of reinforced concrete, has now been launched. The reinforcement consists of steel bars wired together. The outside shell and deck are further reinforced by means of wire mesh placed ¾ inch beneath the exterior surface. This mesh is of very open style, the wires forming squares 6 inches on a side. Naturally, it will take time to find out how long she will last and what her behavior will be on a long sea voyage. One objector seems to expect that the reinforcement imbedded in the concrete of such vessels is going to be rusted by penetrating water—or penetrating salt water, as perhaps he would wish me to say. Well, there is a good deal of reinforced concrete construction standing in salt water all over the world. Hard-headed engineers in responsible positions everywhere seem rather ready to commit themselves to this practice. I cite reinforced concrete bearing piles recently put down on an extensive scale in such widely different climatic situations as the harbors of Halifax, N. S., and Havana, Cuba. A good many reinforced concrete sheet piles were put down in Baltimore harbor some years ago.

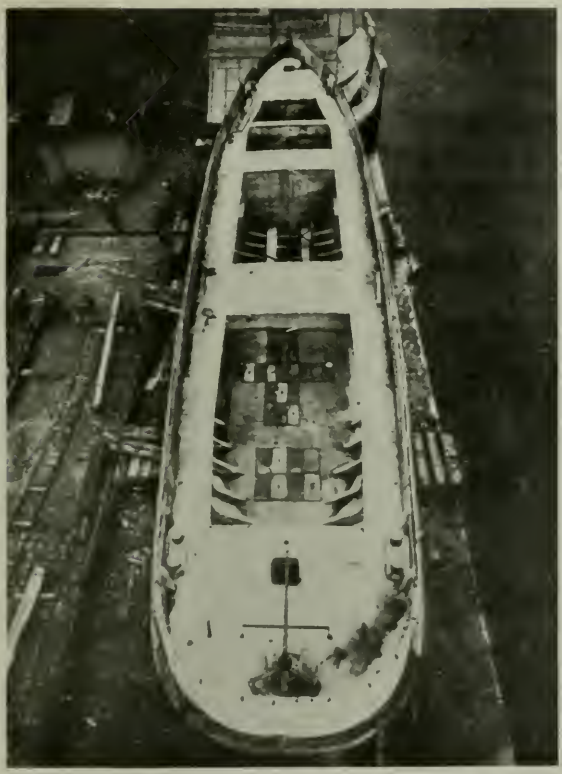
But the proof of a pudding centers in the eating of it. Concrete vessels have been built for a period covering many years—something over half a century, if I am not mistaken. Probably they must have been used on inland waters and all have been small. However, the "Namsenfjord" is the name of a reinforced concrete, sea-going vessel engaged in coastwise traffic in Scandinavian waters. Her deadweight capacity is small, being only about 200 tons. She is fitted with an 80-horsepower oil engine, which enables her to develop a speed of 7½ knots (9 miles) an hour when fully loaded. She is 84 feet long, has a beam measurement of 20 feet and is 11½ feet deep. Those who expect stone ships to have extravagantly thick walls in the hull will perhaps be surprised to learn that the Namsenfjord has a hull thickness ranging from 2½ to 4 inches. The Norwegian concern which put this vessel into the water has constructed a 4,000-ton ore-carrying ship. Some months back this concern had completed or nearly completed a score of concrete vessels—one being a lightship for the Norwegian Government. It is said that the biggest banking concern in Norway is backing this enterprise. If this is correct, then these money people must have had some rather convincing information before them.

The "Namsenfjord" has been officially rated in the A1 class by the British Lloyds after an investigation.

The mode of construction depended upon in the "Namsenfjord" relies upon standard steel material for reinforcement, and not upon elaborate special shapes. Steel wire mesh, steel lath and steel bars were the classes of material used for pretty much all the metal work. It is understood that this one feature of procedure dispensed with the necessity for a good deal of skilled labor, which would otherwise have been needed. This is the kind of thing wanted here in America—a method of ship construction suited to unskilled labor. The wire mesh and the lath are used not so much for reinforcement, it seems, as for moulding purposes. The mesh and the lath are arranged to provide a form. The concrete is poured or placed within. Because of the openings, some of the concrete exudes and forms protuberances and rough places. This roughness of the exterior and interior walls is desired. It provides for bonding the surface layers of coment mortar or other finishing material. The bars are depended upon for reinforcement proper. It is understood that the use of mesh and lath reduced the form work to a comparatively small amount. This would appear, on its face, to be a fine thing, as the construction of forms, the assembling of them and finally the removal use up ordinarily a big total of energy and man-power. It is claimed by the president of this concern that motor-driven reinforced concrete ships of 3,000 and 4,000 tons dead weight may be built here in ninety days. The Norwegian concern proper has gone in for standardized ships of 360, 1,000 and 1,600 tons, all three classes to be driven by oil motors. Nevertheless, it has contracted, as before said, for an ore-carrier of 4,000 tons. This vessel is to be operated by twin screws driven by Diesel engines. It is understood that it is expected that one of the larger sized vessels of the Norwegian concern will cross the Atlantic to the United States.

Concrete is usable not only for boats but also for floating dry docks. The Norwegians have already found this out and given reality to the idea.

An objection which has been brought against concrete ships is their assumed heaviness relative to their carrying capacity. But this objection has, perhaps, been over-rated. Concrete itself is not anything like as heavy as iron or steel, volume for volume. In fact, the specific gravity of concrete is in the neighborhood of 2¼, while that of iron and steel is in the neighborhood of 7½. The reinforcement increases the weight, of course, so we may put it at 2¾, or even 3, for reinforced concrete. It will be seen from this



Concrete shipbuilding on one of France's inland waterways has been developing at a rapid rate. This is a deck view of one of the concrete ships which have been standardized in this yard and are turned out in quantity production.

consideration that the thick walls of the hull in a stone boat are not so much heavier than all-steel walls, despite the fact that the concrete may be 4 or 5 or even 6 inches thick. I quote a table published in England, which exhibits approximately the relation of the weights of concrete hulls to those of steel for various sizes of vessels. It will be noted that as the size increases, the relative excess of weight in the concrete boat decreases.

Cargo capacity. Dead weight. Long tons.	Weight of steel hull. Long tons.	Weight of hull of reinforced concrete. Long tons.	Excess weight of concrete hull. Per cent.	Excess displacement of concrete hull. Per cent.
500	250	475	90	30
1,000	550	950	75	26
2,000	1,050	1,650	57	20
3,000	1,500	2,200	46½	15½
5,000	2,200	2,800	27½	8½

The objection has also been raised that a concrete ship having the same carrying capacity has to be bigger because of the thickness necessarily used in the hull and elsewhere. This increase in bulk means greater resistance by

the water to the propulsion of the vessel. While this, like the objection as to excess weight, is a real and substantial one, it will be seen from the final column of the table that this relative excess of bulk decreases as the ship becomes of larger and larger size. I am not a ship designer, but nevertheless venture the question whether the excess in bulk of a concrete ship might not be excluded from its breadth and depth and allotted to the length alone. In such case, it would appear that the driving power of the engines would not need to be increased at all or only to a relatively small amount, in so far as the increase relates to surface of resistance.

As to cost, it appears that concrete has a great advantage over steel. A joint committee of the American Concrete Institute and of the Portland Cement Association has reported a tentative design for a concrete vessel of 2,000 tons capacity. The cost per ton dead weight was estimated at $63. For a hull of the same kind, the best figures available to the committee ranged from $90 to $120 per ton for steel and $70 to $100 per ton for wood. The amount of concrete required by this design is 731 cubic yards and the weight of steel 482,000 pounds. The flooring for the hold would require some 30,000 feet (board measure), and the timbers for fender and rail some 15,000 feet of oak. The total weight of this vessel was calculated as 1,647 tons. At a draft of 18 feet the carrying capacity is put at 2,028 tons. By sinking the vessel one foot lower, an addition of 185 tons may be made.

As to time of construction, it is pertinent to remark that concrete is the thing when a substantial factory or other building has to be put up quickly. In fact, rapidity of construction has been a well-recognized advantage of concrete. It would seem that ship construction presents no difficulties involving the time element.

However, some facts from actual experience may be adduced here. France was recently reported to be building a large number of concrete tugs having an engine capacity of 250 horsepower. These are, naturally, small vessels. M. T. J. Guerrite, councillor of the French Board of Trade, recently stated with reference to these craft that he had been able to satisfy himself that the moulds for an individual tug could be set up in two weeks and the reinforcement put in place. If the tug was to be repeated by other mouldings, then the setting up of the first form required a longer time. The concreting appears to be a quick job with these boats, as M. Guerrite states that occasionally it was done in forty-eight hours. "All told, it is safe to say that in normal working the yard referred to completes a hull in three weeks." They are launched sidewise. The concrete is given three weeks for maturing. M. Guerrite reports as to another yard that had been only a bare field four months prior to his visit to it, that it then contained two barges, each of 1,000 tons dead weight capacity, ready for launching.

* * *

To Rehabilitate Wounded Soldiers

One of the most complete hospitals in the world, expected to take a large part in the work of rehabilitating American soldiers wounded overseas, is being erected at Detroit, Mich., by Mr Henry Ford, faster than the average building is constructed in peace time, because of Government co-operation in the purchase of materials.

On a twenty-acre tract the hospital, which will bear Mr. Ford's name, will have floor space of 50,000 square feet. It will be a four-story structure, with the exception of the diagnostic building placed in the center, which will go up to six stories. It will front 750 feet on Grand boulevard, Detroit's most popular automobile driveway, and go back 250 feet.

Mr. Ford is spending $3,000,000 on the structure.

Protective Coating Assures Durability of Concrete Ships

ASSURANCE of the high value of concrete ships as a permanent contribution to the great American fleet now being created is given with the announcement by the United States Shipping Board of the discovery of a protective coating which will make the concrete ships as durable as the mighty steel vessels now crowding the shipways of the country.

One of the drawbacks to the concrete ships in the past has been the lack of a satisfactory outside coating. It has been held that when the original surface coating has once been destroyed, the sea water penetrates the concrete and attacks both it and the metal framework in the inside, with disastrous results.

The expert opinion of Mr. R. J. Wig, chief engineer of the concrete ship division of the Emergency Fleet Corporation, is that the new coating will do away with this danger.

"From our comprehensive tests of concrete structures at sea water," said Mr. Wig to a Philadelphia Inquirer correspondent, "we are convinced that concrete ships will last a minimum of several years without any protection whatever. By the application of protective coatings which are well known to us, we are certain of an extended life of several years additional, and with the further developments of protective means upon which we are now working, I believe the concrete ship can be made as permanent as steel, if not more so.

"At a meeting of the American Concrete Institute, held recently at Atlantic City, I was unfortunately misquoted as saying that the concrete ship would last only one year. Of course, this is not so, nor did I say it, and I am anxious to have this erroneous statement corrected as soon as possible because it puts the concrete ship in an utterly false position.

"The many able engineers who are now devoting their time to the study of concrete in our own organization are becoming more and more enthusiastic over the future of the concrete ship. Improvements are constantly being made which make concrete more suitable for shipbuilding.

"Few people realize that the concrete ship is actually 20 per cent lighter than the wood ship, if built of a new concrete mixture developed by the Emergency Fleet Corporation. The aggregate from which this new concrete is made is so light that it floats on water and yet it makes a kind of concrete possessing twice the strength of that used in ordinary building construction. With this development the concrete ship will come into more direct competition with the steel ship.

"There are many problems yet to be solved in the building of concrete ships, and while this new industry sprung into life as an emergency war measure, its future is becoming more established as a permanent institution."

* * *

Naming the Bungalow

They had just moved into the new six-room bungalow, but were undecided as to a name for it. They wanted something original as well as appropriate. She wanted to call it "The Cote," but he thought that was altogether too mushy. He wanted to call it "The Hangout," which she thought altogether too slangy. They never could agree about a name until a year later, when Harry and Carrie were born. Now everybody calls it "The Twin-Six."

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The Danger in the Housing Problem

In war times all problems are the "most important." It depends upon what is being agitated at any particular time — ships, munitions, airplanes, men, money, etc. Six months ago it was the housing of workmen. Men were sleeping fifteen and twenty in a room, sleeping in three shifts, one man, waiting his turn, routing another out of bed when his eight hours were up. Industrial housing was the question of the hour, the paramount issue,—the most important problem.

We do not hear so much about houses for workers today. Is it because the condition has been met? Because the houses have been provided? Not at all! It merely means that we agitated the housing proposition until we found something new to start an agitation about.

Read the technical building journals; scan the various building reports. There is hardly a section that is not clamoring for housing accommodations. In Maine they fear a tent city will have to house part of its new population this coming winter; every munition center, shipyard locality, industrial town, is almost as bad off in housing facilities as it was months ago. In Kansas, where one would little dream of expanding cities at this time, there is an acute shortage of housing. New oil discoveries have created new towns and boomed old ones.

Of course the problem will be solved, houses will be provided. But the great danger in the delay lies in this: the situation will become so desperate that any kind of shelter provided will be welcome. In other words, on the plea of expediency, there is a great danger of temporary shack construction being thrown up, and the dreams and plans for a constructive housing scheme along permanent lines will fall far short of realization.

The Bureau of Industrial Housing and Transportation of the Department of Labor some months ago, in consultation with Mr. Lawrence Veiller, Secretary of the National Housing

Association, and assisted by a number of notable architects and city planners, adopted a set of standards which is recommended for permanent industrial housing developments. These standards were well conceived and far-seeing. If followed, they would establish housing enterprises on an encouraging basis.

But, no less than in the days at Valley Forge, "these are times that try men's souls," and as the necessity for housing grows more and more acute, the temptation to throw up temporary structures, even temporary settlements, will be difficult to resist.

Witness this item from the Emergency Fleet News of July 1st:

"Although steps are under way to erect about 1,600 homes in Wilmington, the housing situation there, on account of the influx of shipyard and other workers, is so acute that it is proposed to have the City Council lift the ban on frame dwellings, so that ready-made shelters may be erected temporarily. Official moving day in Wilmington is June 25. Many families have been notified to move on that day, and have no place to go. Many complaints have been made of the high rents charged."

The best way to promote the growth of Bolshevikism in this country is through maintaining a low standard of living, of continuing to force three men to occupy the same bed in eight-hour shifts, of herding twenty men and more into one room for sleeping quarters.

The solution to a problem of social unrest is through the ministration of social justice. The average worker (the majority) seeks nothing more than a condition of contentment,—a family, a decent living wage, a place in the community, the full rights of citizenship. These may be all summed up in "Home."

Housing is not only an immediate problem, it will be one of the big after-the-war problems. Now is the time to solve it, not only for the present, but for the future. We must build real homes, establish real communities, permanent homes and permanent communities. We must do it now, and do it right, before it may be too late.

NOBLE FOSTER HODGSON.

Architect Must Meet Changed Conditions

It will soon be evident to all that the way things were done "before the war" have very little relation to things as they are now done or as will be carried out later on.

In Government departments in Washington are some placards reading "Forget how things were done before we entered the war." Today there are undreamt of changes in methods and direction of ideas. Architects, contractors and material men already realize that there is much that should be forgotten as to how things were done in the building industry before the war.

The problem of the architect is to so direct his work as to best meet the changing conditions and modes. It is a day when more and more one hears the words "non-essentials" and "essentials." This has a bearing on present-day architecture and must have even a stronger one on the future.

In construction the importance of essentials, for safety, durability, economics, has always been recognized; but along with it went a care-free attitude towards the inclusion of non-essentials—and in this latter may be found a basic error which a better architecture and better buildings may be freed from.

A combination of the purely utilitarian with the intangible something represented by the necessity in human beings to produce impressions over and beyond the purely needful, made the practice of architecture one of the most arduous professions, and likewise the builder and contractor fared in its hardships. The two elements are almost irreconcilable as now fused in architectural design and execution, and it is toward a development wherein the practical and the artistic will be mixed in different proportions, or be leavened by the injection of another as yet untold element, that we may hope to see a readjustment of design in accordance with the newer ideas generated by the great war.

The tendency is likely to be one that will bring design and construction

more into harmony, the former becoming a true expression of function and materials, instead of as in about nine cases in ten before the war the design was simply stage scenery, camouflaging arbitrarily, as suited the architect's fancy, the real thing underlying it. Such a condition, remarks the Building Review, could not but create a biased feeling in the minds of all concerned—owner, architect, contractor, and it will be well for all henceforth to "forget how things were done before the war," in matters of detail at least.

NO LONGER OFFICIAL ORGAN

The directors of San Francisco Chapter, A. I. A., have decided they do not need an official organ and have therefore rescinded the resolution passed some time ago making The Architect, published at 245 Mission street, San Francisco, their official publicity medium.

The chapter held a special meeting during the month to discuss important amendments to the constitution and by-laws.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. Frederick Heath, Tacoma architect, returned recently from a three months' trip through the East. He states that the people of the East are completely absorbed in the business of the war, and aside from industrial plants there is little building going on. Great new factories are being constructed and old ones doubled in capacity. The housing of employees has developed into a large question.

Mr. Arthur G. Lindley, architectural engineer, with offices in the Hollingsworth building, Los Angeles, is a candidate for the nomination for Assemblyman in the Sixty-first Assembly District in Southern California. Mr. Lindley is heartily in accord with the Government's war policy and an advocate of national prohibition.

Mr. Washington J. Miller of San Francisco has been appointed a special architect to investigate and report on the construction work of the Washington School building, Sacramento, with a view to determining if the plans and specifications have been deviated from in any particular.

Mr. Edw. Larsen, who for some time has been doing drafting work in the office of Mr. Mathew O'Brien, a San Francisco architect, is engaged in designing concrete boats for the San Francisco Shipbuilding Company. Mr. Colmesnil is also with this company.

Mr. Robert D. Farquhar, who has been practicing architecture in Los Angeles for more than ten years, has departed for Italy to engage in Red Cross work. Three former students of the Paris Ecole des Beaux Arts, friends of Mr. Farquhar, are stationed in Italy.

Mr. Hamilton Higday, port manager for the port of Seattle, and Mr. George F. Nicholson, port engineer, recently paid a ten days' visit to San Francisco where they made an inspection of the San Francisco harbor facilities.

Mr. August G. Headman has temporarily closed his offices in the Call-Post building, San Francisco, and is engaged in war work at one of the Southern California shipbuilding plants.

Messrs. Falch & Knoll, architects in the Hearst building, San Francisco, have dissolved partnership, and for the present Mr. W. C. Falch will retain the old offices at 1202 Hearst building. Mr. A. H. Knoll is now with the Union Construction Company, which is constructing a shipbuilding plant in the Key Route basin, Oakland.

Mr. F. C. Clark, architect of Medford, Oregon, is supplying plans for a number of buildings in northern California and recently received a commission from Wenatchee, Washington, for a three-story packing house.

Mr. Arthur Brown, Jr., member of the architectural firm of Bakewell & Brown, is in San Francisco again, after six months' stay in the East as a member of the faculty at Harvard University.

Mr. D. C. Coleman, architect, has given up his office in the Clunie building, and is doing some drafting work for the government in the Wells Fargo building, San Francisco.

Mr. Edwin Symmes, Architect in the Pacific Building, San Francisco, has been appointed chief draftsman of the architectural work for the new Liberty shipbuilding plant, Alameda.

Mr. R. W. Kinne, formerly with Willis Polk & Company, is now with the Aberthaw Construction Company, contractors for the new Liberty Shipbuilding plant at Alameda.

Mr. John T. Vawter, formerly practicing architecture in Los Angeles, has received a commission as major in the U. S. Engineer Reserve Corps.

$200,000 Brick Warehouse

Plans have been completed and a contract let by Mr. Leo J. Devlin, Pacific building, San Francisco, for the construction of a four-story brick warehouse at Kansas and Alameda streets, San Francisco, for Dunham, Carrigan & Hayden. The building will be equipped with gravity chutes and conveyors, steel fire doors, freight elevator and automatic fire sprinklers. The structure with equipment will cost $200,000. This is the second building of similar size and type of construction designed for the Dunham, Carrigan & Hayden Company by Mr. Devlin.

Mare Island Housing Plan

Plans have been completed by Mr. George W. Kelham, the San Francisco architect, for the United States Government's housing scheme in California. Bids for the work have been taken and it is expected that construction will be started in the near future. The site is north of Vallejo and facing Mare Island, the area to be covered being about one hundred acres. Two miles of streets are to be laid out, all work being of a permanent nature, including an outfall sewer system, water and gas pipes, hydrants, electroliers, wiring, etc. There are to be twenty frame apartment houses, having four rooms to an apartment; ten frame apartments, having three rooms to an apartment; twelve double houses, of five rooms each; sixty-three single houses, of four, five and six rooms each; and ten dormitories, of forty rooms each. All the buildings are to be frame, with an average height of two stories. The estimated cost of the scheme is $1,000,000. The engineering plans were prepared by Mr. Stephen E. Kiefer, Mechanics Institute building, San Francisco.

Enlarge Military Academies

The tendency of the times toward military discipline has resulted in overcrowding the various military schools throughout the country. California is no exception to the rule. Both the Mount Tamalpais Military Academy and the Hitchcock Military Academy in San Rafael have more applications for accommodations this fall than they can supply, therefore steps have been taken to provide additional class rooms and dormitories. In the case of the Mount Tamalpais Military Academy plans have been prepared for an additional dormitory by Messrs. Cunningham & Politeo, while the Hitchcock Military School additions have been planned by Mr. Milton Latham, both San Francisco architects.

Planning the New Jackling House

Although Colonel D. C. Jackling will not build his new country home at Hillsborough, San Mateo county, until the close of the war, he has given instructions to his architect, Mr. Willis Polk, to go ahead with the drawings so that when peace has been declared construction of the house may proceed without delay. Mr. Polk has a number of very elaborate schemes which are being given careful study, one an English type. It is expected the Jacklings will spend $1,000,000 on their new home.

Butte County Detention Home

Plans have been prepared by Mr. Chester Cole, architect of Chico, for a two-story frame detention home, to be built at Oroville for Butte county, at a cost of $20,000.

Architect Discusses School Building

Mr. Charles Sumner (formerly Charles Sumner Kaiser), a member of the San Francisco Society of Architects, recently discussed school building finance after the war in the Education building at Stanford University.

His discourse was illustrated by charts intended to bring out three main questions:

"How will the war affect future school buildings?"

"How much of our education budget should go into schools?"

"Where should we get the money?"

His main conclusions that educational thrift will have to shine as never before in the new schools without detriment to their attractiveness; that to this purpose architects will have to educate themselves in the fundamentals of educational-hygienic housing, not remain lazily dependent upon a set of rules made in Boston; that while much greater sums will be demanded for education in the coming social order, relatively more should be expended for teaching.

As for getting the money, he presented proof both in theory and in actual experience that bonding for such recurring needs is wrong in principle and should be severely restricted, and that every cent possible for this, and like social purposes, would better come by direct taxation.

Oakland Architect Busy

A group of farm buildings, including a packing house, store house, implement shop, stable, garage and cottages, is being designed by Mr. C. W. Dickey, Oakland architect, for a client in Yolo county, California. The buildings are to be of either concrete or frame construction, with tile roof, and will cost approximately $25,000.

Mr. Dickey is also preparing plans for a two-story frame and plaster residence and garage to be erected in Piedmont Heights for Mr. D. F. Shapro.

Four-Story Addition

Mr. G. A. Applegarth, architect for the Spreckels interests, has awarded a contract to McLaren & Peterson, Sharon building, San Francisco, for removing two stories of the six-story Tillmann & Bendel building at Davis and Pine streets, and adding four stories. Construction will be of reinforced concrete and when finished the building will be occupied by the various interests of the Spreckels Bros. The contract to McLaren & Peterson has been let on percentage.

Sequoia Park Cottage

Messrs. Welch & Carey, San Francisco architects, have prepared plans for a rustic cottage at Sequoia Park, San Anselmo, for Mr. John Kunneman.

Home Again

Mr. R. A. Herold, architect of Sacramento, has returned from an eight months' tour abroad. Accompanied by Mrs. Herold and her sister, the three visited the Sandwich and Hawaiian islands, Japan, China and the Philippines. Mr. Herold found the most to interest him from an architectural standpoint in Peking, China. While there he was fortunate in being permitted to pass through a considerable portion of the Forbidden City, where he obtained some very remarkable photographs. Numerous snapshots of Japanese architecture were also taken and later Mr. Herold will show some of them in an article for this magazine.

Recognition for Mr. Mullgardt

Mr. Louis C. Mullgardt of San Francisco, whose work is well known to readers of this magazine, has been commissioned to prepare plans for the Pan-Pacific Peace Exposition to be held in Honolulu after the war. The site has already been tentatively selected near Wai-ki-ki beach. Mr. Mullgardt is now at work on the preliminary drawings. It is Mr. Mullgardt's purpose to create an architecture typical and suggestive of the Pan-Pacific idea. In taking hold of Pan-Pacific work, Mr. Mullgardt will have associated with him in Hawaii Messrs. Lionel Walden, D. Howard Hitchcock, and Gordon Usborne, as well as the leading architects of Honolulu, and others who will be summoned from the United States.

Addition to Bankers Investment Building

Owing to the scarcity of structural steel, the one-story addition to the Bankers' Investment building at Market and Geary streets, San Francisco, will be of reinforced concrete and will cost approximately $100,000. The top floor of the present building, together with the floor to be added, have been leased to the Western Union Telegraph Company. Mr. Frederick H. Meyer is the architect.

Planning Large Dairy

Mr. E. C. Hemmings, architect of Sacramento, has been commissioned to prepare plans for a large dairy, creamery and milk depot for the California Milk Producers' Association, Mr. H. M. Ellis, secretary, Fruit Exchange building, Sacramento.

War Work Overseas

Two of Washington's best known architects and engineers have heeded the call for Young Men's Christian Association work overseas and have sacrificed long established office practice to enlist in the brotherhood work. They are Messrs. George H. Keith, architect of Spokane, and Ralph H. Ober, engineer of Seattle. Both men have left for the front followed by a godspeed and well wishes for a safe return from hosts of friends in both cities.

Teachers of Design

The Department of Architecture at the University of Illinois is in need of three men to teach elementary and intermediate design and one man to teach free hand drawing. All applications should contain full information as to training, experience, salary expected and classification in the draft and must be accompanied by a 2x3 photograph. Address all communications to Mr. L. H. Provine, Department of Architecture, Urbana, Illinois.

$30,000 Country Home

Mr. Henry Shermund, architect in the Mills building, San Francisco, is completing working drawings for a $30,000 country house and outbuildings at Winters, Yolo county, for Mr. J. S. Sparks. Construction materials will be hollow tile and cement plaster with terra cotta tile roof, birch interior finish, white enamel in sleeping rooms, steam heat and vacuum cleaning.

Big Work Coming at Mare Island

The Government has authorized some extensive new construction work at Mare Island. Plans have been prepared for a structural shop, 300x700 feet, and a machine shop, 150x215, the two buildings to cost close to a million and a half dollars. Plans have also been finished and bids taken for two frame dormitories.

Residence Alterations

Mr. George W. McCrea, First National Bank building, Oakland, has prepared plans for extensive alterations to the residence of Mr. Carter of W. R. Grace & Company, on Vallejo street, between Scott and Devisadero, San Francisco. The improvements are expected to cost $20,000.

To Build Concrete Barges

Mr. W. Leslie Comyn, president of the San Francisco Shipbuilding Company, 310 California street, has announced that it is probable that his company will shortly begin the building of a 1000-ton concrete lighter. Like the concrete ship, the concrete lighter is largely in the experimental stage.

Four-Story Brick Apartments

Mr. Albert Schroepfer, Nevada Bank building, San Francisco, has prepared plans for a four-story and basement brick apartment house to be built on Sutter and Jones streets, for Mr. Louis Stoff, to contain sixteen apartments and cost $45,000.

Mr. Brunnier Writes of Concrete Ship Progress

Editor The Architect and Engineer:

The concrete ship programme is progressing very nicely. We have finished the design of a 3,500-ton concrete cargo ship and have almost completed the plans for a 7,500-ton concrete oil tanker, and, besides this, we have designed many other types of concrete vessels, such as barges and tugs.

Along with our designing work we are carrying on quite an investigative programme, such as light concrete, concrete protective coatings, reversal of stresses, etc., all of which, when completed and published, will be of immense value to the construction world outside of concrete shipbuilders.

The policy of the Shipping Board is for the Government to build its own ships in its own yards and from its own plans, and in carrying out this policy they have established five yards of four ways each and have taken over certain contracting organizations to act as Government superintendents.

At Wilmington, N. C., the Liberty Shipbuilding Company is the superintendent and is to build two 3,500-ton and six 7,500-ton concrete ships there.

At Jacksonville, Fla., A. Bentley & Sons Company will operate the yard.

At Mobile, Ala., Fred T. Ley & Company; at San Diego, Cal., the Scofield Engineering Company; and at San Francisco, Cal., the San Francisco Shipbuilding Company.

The last four yards mentioned are each to build eight 7,500-ton concrete ships, and, besides these forty vessels, one concrete vessel is being built at the Fougner yards in New York and one at Brunswick, Ga.

Construction has been started on all five of these yards and it is expected that all forty-two of these ships will be in the water a year from now.

H. J. BRUNNIER,
Assistant Head, Concrete Ship Department of the Division of Steel Ship Construction.

San Francisco Society of Architects

The San Francisco Society of Architects has nominated the following officers for 1918-19: President, Mr. John Reid, Jr.; vice-president, Mr. Ernest Coxhead; secretary and treasurer, Mr. Warren Perry; directors, Mr. Geo. W. Kelham and Mr. G. A. Lansburgh.

Wilson-Perry

The marriage of Miss Joy Wilson, daughter of Mrs. William Arthur Wilson, and Mr. Warren Charles Perry, architect, occurred at St. Mark's Episcopal church, July 19, 1918. Mr. Perry is secretary-treasurer of the San Francisco Society of Architects.

Three Packing Houses

The California Associated Raisin Company, with headquarters in Fresno, has started construction of three new packing houses, one at Cutler, one at Biola and one at Las Palmas. Each building will be 142x82, two stories and of concrete and brick. Trewhitt & Shields, Rowell building, Fresno, will be in charge of the work.

Hear Shipbuilder

Mr. Fred L. Baker, president of the Los Angeles Shipbuilding and Dry Dock Company, addressed the Engineers and Architects' Association of Southern California at Los Angeles, July 25. The company of which he is the head is making a splendid record in the construction of steel ships for the Emergency Fleet Corporation. His address on the topic, "Shipbuilding," was most interesting. Mr. William Mulholland, chief engineer of the Los Angeles department of public service, and past president of the association, was also present and spoke.

Election of Officers

At a recent meeting of the San Joaquin Valley Association of Architects the following officers were elected for the year 1918: President, E. B. Brown; vice-president, F. V. Mayo; secretary, Joseph Losekann. The society's first effort, a building law for Stockton, has been completed and turned over to the city and it is believed the measure will be adopted shortly.

Woman in Role of Engineer

Miss Louise Parker of Visalia is the first woman to enter the engineering field in Southern California since the war has drawn so heavily on the ranks of the engineering profession. County Surveyor Byron O. Lovelace of Tulare county, on whose force Miss Parker is employed, reports that her service has been most satisfactory. She has been doing field work.

Site for College Building

The California Bible College has purchased the southeast corner of Gough and Geary street, San Francisco, and will convert the building on the site into classrooms. After the war a $50,000 college will be constructed, according to Dr. D. A. Russell, Dean of the institution.

Ship Plant on Old Fair Grounds

It is reported that negotiations are under way by the Bethlehem Steel Corporation, Ltd., for the Panama-Pacific Exposition Fair Grounds, covering about forty-five blocks, as a site for an immense shipbuilding plant.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Women Carpenters in France

Mr. E. H. Hewitt, a Minneapolis architect, who went to France last spring to take charge of the construction of Y. M. C. A. "huts" for the French armies, has returned to Minneapolis and recently related some of his experiences to St. Marks Forum. Before leaving France he had erected more than 500 of these "huts." Mr. Hewitt said:

When I first reached France a serious situation confronted me. The general plan was to construct hundreds of these huts. Some were to be directly behind the lines and others were to be farther to the rear.

The principal difficulty was to get labor. There isn't a skilled mechanic unoccupied in France. Every boy and man above the age of 19 years, who is able-bodied, is in the army. The women are taking their places. On the "Y" huts we used women carpenters—and they really knew how to drive nails straight.

Each hut is 20 by 100 feet in size. It is built exactly like barracks. The question of lighting was quite serious. One of these buildings would have only six 16-candle-power bulbs at one time for lighting purposes. The walls were painted white and that conserved lights and helped considerably.

The Hardwood Lumber Situation

White Bros., hardwood lumber dealers of San Francisco, in their last Bulletin, quote from an editorial in the Hardwood Record of Chicago, under date of June 25, which describes the condition of the hardwood market as brought out at the convention of the National Hardwood Lumber Association, held at the Congress Hotel, Chicago, June 21st and 22d:

As it is today, the unanimous pronouncement is that hardwood lumber is sold up, that prices are governed merely by ability to furnish stock, that there is not the slightest chance of production overtopping demand. The situation might be best described by the statement that very few hardwood men today would be willing to sell stock that they did not have actually bought. The significance of this description lies in the fact that prices climb so rapidly that it would not be safe to sell at a certain figure without knowing definitely that the material sold could be purchased at a figure leaving room for a reasonable profit. It is so difficult to locate any quantities of salable material in almost any line that in the length of time necessary to locate stock with which to cover an order, it is likely that the price would have climbed to such an extent that the delivery would be made at an actual loss.

These are the conditions in the East today. Prices have jumped out of sight in certain lines. Quartered oak is more scarce than it has ever been in the history of the business, and a rise in the retail price on the Pacific Coast of five or six cents a foot is imminent. Plain oak, ash and poplar are also due for a considerable advance, and that very shortly. The two raises in freight rates within the last several months have placed an additional burden on the cost of hardwood to Pacific Coast consumers.

Owing to the scarcity of dry stocks and the unsteadiness of prices, it is advisable for all users to take advantage immediately of any material they can locate.

Portland Shipbuilding Has Enormous Growth

A striking growth of shipbuilding industry in Portland, Ore., and vicinity is presented in a summary issued by the Portland Chamber of Commerce, showing conditions that existed December 10, 1916, compared with May 22 last. The summary follows:

	Dec. 10, '16.	May 22, '18.
Plants building steel ships	3	*4
Plants building wooden ships	6	†17
Number of employees	4,200	29,750
Monthly pay-roll	$302,400	$3,213,000
Steel cargo ships launched	.....	23
Tonnage of steel ships launched	.....	176,000
Wooden ships launched	3	70
Tonnage of wooden ships launched	10,800	266,000
Ships on ways	11	94
Tonnage of steel ships on ways	48 000	370,400
Total of contracts	$22,250,000	$175,300,000

*One under construction.
†Three under construction.

	Tons.
Portland	24,150
Outside of Portland	5,600
Total	29,750
Steel	76,800
Wood	293,600
Total	370,400

No. vessels launched:	1916.	1917.	1918.
Wood	3	31	39
Steel	.....	8	15
Tonnage:			
Wood	10,800	117,800	148,200
Steel	.....	61,600	114,400
Total tonnage	10,800	179,400	262,600

Nice Contract for Mr. Boxton

George W. Boxton & Son, Hearst building, San Francisco, have been awarded a contract for the construction of a two-story reinforced concrete apartment house, 70x250, to be erected at Jerome, Arizona, for the United Verde Copper Company. It will contain thirty-three two-room apartments. The plans were prepared by Mr. Arthur Kelly, 110 Story building, Los Angeles.

Is a Concrete Pavement or Road Surface an Arch Bridge?

While an arch principle, when referred to in civil engineering work, generally is connected with some part of a building or bridge, the fact that all our pavements are arches probably has not been duly considered. On a road, for instance, the rise of the crown is governed mainly by the nature of the subgrade soil, the width of the road bed and class of pavement to be laid, while on the other hand, the rise of an arch bridge depends to a large extent on the span and the direction in which the resulting stress will be transmitted to the abutments and, finally, the surrounding soil.

Probably the main difference between the arch principle in the bridge and in the road surface is that in the first instance the pressure is transmitted to individual abutments, while in the case of a road surface the sub-soil acts as a continuous abutment. As to how arch action would tend to make a pavement more stable under heavy traffic traveling at high speeds is a matter open for discussion. It may be that the failures in a pavement are often caused by the inability of the arch to sustain loads when certain portions of the sub-soil have become disintegrated. Although this principle of arch action in road construction is worthy of consideration, it does not seem practicable at present to apply methods of arch bridge design to the pavement because of the more or less unstable condition of the pavement's so-called continuous abutment.—Contract Record.

San Jose's Building Record

The San Jose Builders' Exchange recently held its semi-annual meeting, and Mr. R. S. Kooser, secretary, reported that the building record for the past six months in the Garden City exceeded the record for the entire year of 1917. And this in spite of the increased cost of materials and labor.

The new officers of the exchange for the ensuing year are: Mr. H. C. Doerr, president; Mr. J. M. Zollars, vice-president; Mr. A. S. Williams, secretary; Mr. R. S. Kooser, executive secretary; Mr. B. M. Knapp, assistant secretary, and Mr. P. T. Jorgensen, trustee.

Gets Big Government Order

The Llewellyn Iron Works of Los Angeles, has been awarded a contract by the Emergency Fleet Corporation for more than $4,000,000 worth of marine engines. These engines are of the same type as those which the Llewellyn plant has been making for the government. These comprise 1400 h. p. engines for wooden ships and 2800 h. p. engines for steel ships of 8800 tons dead weight capacity. The Llewellyn plant will be able to handle this new order, in addition to completing contracts on hand, without any material increase in its plant or force of employees.

Architects' Drive

The National Planning Bureau, with headquarters at Wilkesbarre, Pennsylvania, is making a nation-wide drive in the interest of the architects, so that when peace is declared we may be prepared and may have not only the materials ready for the jobs, but also the plans.

Their slogan is "Plan Buildings Now." After the war is over the architects will be overwhelmed with work. We shall be like a great army of hungry men in the presence of food-a-plenty, bound hand and foot and calling for help to a little group who shall be overwhelmed in their effort to serve. . . . Haste, through unpreparedness, means costly errors—things forgotten, or the "cart before the horse," commercial or architectural monstrosities, and monuments to incompetency and unpreparedness. We were unprepared for war, let us be prepared for peace.

Water Heaters in Bathrooms

An ordinance has been passed by the city council of Los Angeles prohibiting the installation in the future of the so-called instantaneous type of gas water heaters in bathrooms. The retroactive feature of the original ordinance, which brought forth a storm of protest, was eliminated, but the owners of houses in which these heaters are now in use, must provide proper vents for them. Many persons have been asphyxiated by noxious fumes from gas water heaters in bathrooms and as a measure of public safety the new ordinance will meet with general approval.

Making Concrete Boats

Following is a list of Pacific Coast concerns interested or engaged in concrete boats, barge and ship construction:

San Francisco Shipbuilding Company, 510 California street.

Great Western Concrete Shipbuilding Company, Vancouver, B. C.

Hewitt Dry Dock & Shipbuilding Company, Portland, Oregon.

American Concrete Pipe & Shipbuilding Company, Tacoma, Washington.

Interocean Barge & Transport Company, Seattle.

Newport Beach Shipbuilding Corporation, Newport Beach, California.

Motor Ship Corporation, Martinez, California.

Hurley Mason Company, Portland, Oregon.

Hull Construction Company, Spokane, Washington.

West Coast Shipbuilding Company, Everett, Washington.

Treiber & Sheel, Seattle.

Back From the Trenches

THE crippled soldier, shattered in health, incapacitated for work, is going to prove an industrial liability to this nation unless some way be found to rehabilitate him, to enable him at the same time to earn his own living, and to restore him as a useful member of society. If he be left a parasite his very dependence will tend to rob him of his self-respect. Multiply him by thousands and you have a condition fraught with every possibility of national danger.

Our men are in the fight. The question is now upon us, calling for an immediate answer. It is a thing which directly concerns every industry in this country. These men must be absorbed and used by the industries of the nation; and they must be so trained that they can be utilized.

Already the United States is acting along the same lines. A committee of forty men was recently invited to confer on the question with Surgeon-General Gorgas, so that there might be formulated a definite plan of action.

On that committee were: Mr. H. P. Claxton, Commissioner of Education, chairman; Mr. Allen Walker, Chamber of Commerce of the United States; Major W. A. King, Surgeon-General's Department of the Army; Major H. E. Mock, Surgeon-General's Department; Mr. R. D. Jones, War Risk Insurance Bureau; Dr. C. A. Prosser, Federal Board for Vocational Education; Mr. J. W. Sullivan, Department of Labor; Mr. R. M. Little, Chairman of the Compensation Commission; Judge Mack, Treasury Department, representing Secretary McAdoo; Dr. Royal Meeker, Department of Commerce, and Mr. N. B. Williams, Counsellor for the National Association of Manufacturers.

As a result the committee drafted a "Vocational Rehabilitation Bill," which provides that every person discharged from active service shall upon order of the War Risk Bureau, follow such courses of vocational education as the Board for Vocation and Rehabilitation shall prescribe and provide.

A New Record in Concrete Construction

Once again all previous records in engineering accomplishments have been shattered and once again the application of the method electrical will be enabled to replace to an enlarged extent the much needed man-power of the nation. And again it is the engineering enterprise of the West that carries away the honors. The Faith, a new concrete ship which has surpassed in daring of proportions any previous attempt of this sort, has most successfully completed a voyage under very trying weather conditions from San Francisco to Seattle. This new all concrete ship which was recently launched at Redwood City, California, is a 4500 ton craft, three hundred and twenty feet long and has a speed of ten knots per hour. Its performance has proven so eminently satisfactory that the government is now engaged in erecting five great concrete shipbuilding plants, two of which are being located in seaports of the West.—Journal of Electricity.

Confer on Concrete Ships

Mr. R. J. Wig, Chief Engineer of Concrete Ship Construction, was recently in conference with Vice-President Piez on concrete shipbuilding. During his absence Mr. H. J. Brunnier, Assistant Chief Engineer, was in charge.

Architect to Build Home

Mr. John Bakewell, Jr., of Bakewell & Brown, 251 Kearny street, San Francisco, has let a contract to Mr. C. M. McGregor, Perry building, Oakland, to build a two-story and basement frame residence in Lakeshore Highlands. Mr. Bakewell has also made plans for a $5,000 home in Lakeshore Highlands for the Lakeshore Highlands Company, Syndicate building, Oakland.

WHITE BROTHERS

HARDWOOD
LUMBER
TIMBER
FLOORING
VENEERS
PANELS

FIFTH and BRANNAN STREETS

THE LARGEST STOCK OF HARDWOODS IN THE WEST

SAN FRANCISCO, CAL.

California Ships Best

The wooden ships being built in California are better than those constructed in Washington and Oregon, according to a number of shipping men who have charge of the operation of the completed ships. This statement was made recently by a port captain of a company who had just completed dictating an order to the representatives at an offshore port for the handling of one of the vessels which had been built at a northern shipyard. In explaining the communication, he said:

"Owing to the demand for speed, the vessels in the north are being put together before the wood has a thorough opportunity to dry out. The weather conditions up there are not conducive to the drying-out process, and the result is that these ships must be caulked before they are loaded—that is, recaulked—in many instances. As soon as they get into commission and any of the hull between wind and water is exposed it proceeds to dry out, and then there is a merry time until the caulkers have put in a lot of time and material.

"The climatic conditions of California are more favorable, and the wood dries before being put together, so the result is a dry vessel and one that will last a long time. Wet timbers will not last long, and this means a short-lived vessel, in my judgment. More attention should be paid to wooden ship construction in California, for this is where we can build all classes of vessels better than anywhere else on earth."

Steel by Express if Necessary

Director-General Schwab and Vice-President Piez recently approved contracts for six 5,300-ton cargo ships, to be built by the Hanlon Dry Dock and Shipbuilding Company. The contracts may mean a large extension to the yards.

Mr. Dan Hanlon, head of the company, complained that his yard was having difficulty getting steel. He had the men and the equipment, he said, but was very shy of material. Mr. Schwab said:

"I will send you the steel if I have to send it by express."

The contracts for the new ships were signed in the presence of Mr. Schwab, Mr. Piez and Mr. C. W. Cuthell, general counsel of the Emergency Fleet Corporation.

Work of State Architect

The work of the California State Department of Architecture will be shown in the September Architect and Engineer. A number of exceptional interest is promised.

Building Fifty Small Boats

Mr. George Kneass, proprietor of a pioneer San Francisco boatbuilding concern, which has operated on the shores of San Francisco bay for nearly half a century, is constructing fifty small boats to be used on the new steamers being constructed for the Government at Oakland and Alameda. These are lifeboats, and represent the last word in this class of craft.

The Kneass plant is an important industry to San Francisco, and employs about 125 men at all times. On an average of two boats are completed each day, a record that has never been achieved before. Owing to the demand for boats and other ship craft, Kneass has increased the equipment of the factory until it is now a big shop.

The plant is also building two fifty-foot launches for Peterson Inc. They will be twelve feet in beam, with a depth of six feet, and will be equipped with 60-horsepower Union engines. They are of light construction, are designed to carry passengers and light freight, and will be ready for launching August 15 and 30 respectively.

This plant is one of two that have survived the competition of thirty-six years. Originally there were about forty of the small boatbuilders scattered about the shores of the bay, but one by one they went out of business.

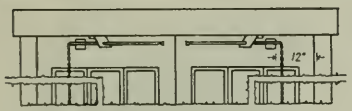
The San Francisco yard has the distinction of doing the majority of the work for the Seattle, Puget Sound and Columbia River shipyards. Practically all of the lifeboats installed on vessels built in the north are constructed by Mr. Kneass.

Pouring Concrete for New Boats

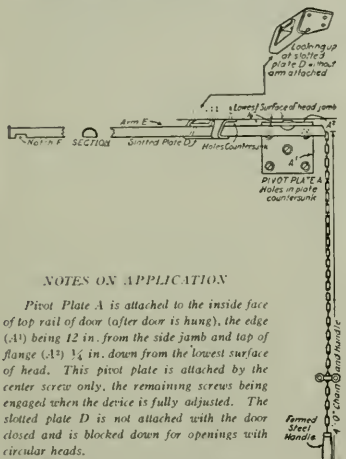
Mr. Ben F. Dupuy, well-known Southern California civil engineer, now has charge of the placing of concrete on the ships being constructed at the plant of the Los Angeles Shipbuilding and Dry Dock Company. All of the ships are reinforced with concrete between the frames in the ends of the hull and the water tanks have a concrete floor placed in them. About six hundred sacks of cement are used in the concrete for each boat and as most of the concrete has to be carried through the ship in buckets it takes a gang of fourteen men about twenty days to place the concrete on one boat.

Ten Cents a Brick

The work of rebuilding St. Mary's College is well along. The mansard roof, which was burned off by the recent fire, has been replaced with a full story of brick. The building committee has received a large number of pledges at ten cents a brick.



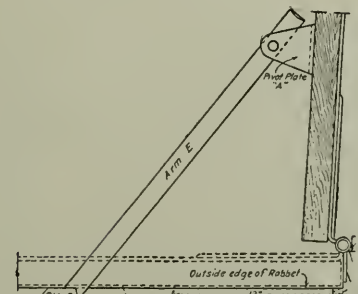
ELEVATION OF GARAGE DOOR HOLDER NO 1774
Pivot Plate A attached to door, Slotted plate D to head jamb



NOTES ON APPLICATION

Pivot Plate A is attached to the inside face of top rail of door (after door is hung), the edge (A¹) being 12 in. from the side jamb and top of flange (A²) ¼ in. down from the lowest surface of head. This pivot plate is attached by the center screw only, the remaining screws being engaged when the device is fully adjusted. The slotted plate D is not attached with the door closed and is blocked down for openings with circular heads.

When the door is opened slighty more than 90°, Slotted Plate D is attached to lower surface of head jamb as shown with the notch F in arm engaged in the lower flange of slotted plate D. In this position the door is held securely open. A slight pull on the chain releases the notch and door closes.


Pivot Plate "A"
Arm E
Outside edge of Rabbet
12"
PLAN OF GARAGE DOOR HOLDER NO 1774
Solid lines show door opened.
Dotted lines show door closed.
Slotted plate D attached when door is opened a little more than 90°

Stanley Garage Door Holder No. 1774

THE importance of avoiding possible damage and injury due to a swinging garage door is so well understood these days that swinging doors on new garages as well as old ones are now largely equipped with the Stanley Garage Door Holder No. 1774, which is recognized as being ideal for the purpose for which it is designed.

This arm of steel is simple, strong, fool-proof, positive in its action, and it locks the door open, preventing it from blowing shut and smashing the car entering or leaving. A pull on the release chain permits the door to be closed.

Convenient, sensible, necessary, the Stanley Garage Door Holder perfectly performs the work it is intended to do.

Specify it!

Sold by Leading Hardware Stores.

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Manufacturers of Wrought Bronze and Wrought Steel Hinges and Butts of all kinds, including Stanley Ball Bearing Butts. Also, Pulls, Brackets, Chest Handles, Peerless Storm Sash Hangers and Fasteners, Screen Window and Blind Trimmings, Furniture Hardware, Twinrold Box Strapping and Cold Rolled Strip Steel.

Stanley Garage Hardware is adaptable for factory and mill use.

Prize Winners of Liberty Loan Advertising

Prize winners in the Fourth Liberty Loan advertising copy contest for Northern California are announced by the Liberty Loan Publicity Committee as follows:

H. K. McCann Company, first prize, $35; Honig-Cooper Company, second prize, $25; H. K. McCann Company, third prize, $15. Mabel E. Price Lehre and H. K. McCann Company, honorable mention. All prize winners were from San Francisco.

The judges of the Northern California copy were: Miss Mary Ennis of the Emporium, Fred S. Nelson of O'Connor-Moffatt Company, and Fred Mantor of Hale Bros., all San Francisco firms.

Copy winning first prize carried the heading, "Make It a Knockout. Subscribe to the Fourth Liberty Loan," and shows a soldier in the act of hurling a heavy bag of gold down on the kaiser, who is crouching to attack. The second prize winner represents an infantryman pointing his finger in the face of the kaiser and the copy is headed, "The Doughboy Speaks." The winner of the third prize represents a citizen in the attitude of hurling a bag full of gold as a hand grenade and the caption reads, "Bomb the Kaiser."

The two honorable mentions represent the Government as "Uncle Sam & Company, Unlimited," and the other is captioned "Your Money Feeds the Guns that Stops the Huns."

National Housing Corporation

The Department of Labor announces the creation of the United States Housing Corporation, which will, in a large measure, take over the functions that are now being performed by the Bureau of Industrial Housing and Transportation. It is expected that this new vehicle will afford more facility in operation than would be possible under the usual Governmental agency.

The charter was taken out under the laws of the State of New York and the articles of incorporation provide for the issuance of one thousand shares of stock without par value.

The executive officers of the corporation are: President, Otto M. Eidlitz; vice-president, Joseph D. Leland; treasurer, George G. Box; secretary, Burt L. Fenner. They, in conjunction with Albert B. Kerr, John W. Alvord and William E. Shannon, serve as directors.

The stock is held on behalf of the Government by the Secretary of Labor, who is credited with nine hundred and ninety-eight shares, and Otto M. Fidlitz and George G. Box with one share apiece.

THIS house on Alexandria Street, Los Angeles, illustrates how thoroughly one coat of Bay State Brick and Cement Coating beautifies a house and protects it from the elements.

Bay State Brick and Cement Coating is sold in various tints. Write for Booklet No. 44. It is full of facts and photographs. If you tell us the tint you desire we will send a sample along.

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BAY STATE
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BAY STATE

Pioneer Builder.

Mr. H. Clay Kellogg, president of the Orange County Engineering and Construction Company of Santa Ana, has charge of the construction of a beautiful mausoleum on Foothill boulevard, Oakland, for the Pacific Mausoleum Company, which building is described and illustrated elsewhere in this issue. When completed the structure will be one of the finest on the Pacific Coast, representing an investment of more than $200,000. Mr. Kellogg has been connected with the construction of less pretentious mausoleums in Southern California and is a pioneer engineer and contractor in this class of work. Mr. Kellogg has been in charge of construction work for thirty-five years and has many large works to his credit, both in Southern California and the Hawaiian Islands, where he built one of the largest dams of its class in the world.

PACIFIC FIRE EXTINGUISHER CO.
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504-505 McKay Bldg., Portland, Ore. 563 I. W. Hellman Bldg., Los Angeles, Cal.

Trained Men Needed

On account of the great number called into different forms of service, the demand for men trained as landscape architects, particularly in the field of city planning, already far exceeds the number of men available. These needs are clearly increasing, and will continue to increase not only during the war but also during the following period of reconstruction. This reconstruction is recognized as involving both the rebuilding of destroyed communities and the development and reorganization on an unprecedented scale of areas intensively occupied in their relation to state and nation. To meet these needs now by the immediate training of men fitted to participate in this exceptional public service, it is of the utmost importance that properly qualified men should offer themselves for this training.

For further information address:

PROFESSOR J. S. PRAY,
Chairman of the School of Landscape Architecture, Harvard University, 50 Garden street, Cambridge, Mass.

More Engineers Wanted for Army

Two thousand more engineers are wanted to serve as officers in the Engineers' Reserve Corps of the U. S. Army. A call for men qualified in the profession has been received by the University Military Bureau at the University of California at Berkeley, and an appeal has been made to Southern California to help fill up the State's quota. Applicants must be engaged in the active practice of some branch of the engineering profession, must be in good physical condition and must possess the qualities of leadership and temperament requisite to command troops. Commissions as first lieutenants and captains will be given within ten days or two weeks to all applicants who are accepted. They will then report to an engineer officers' training camp for instruction preparatory to active service.

State Work Held Up

Much of the proposed construction work by the State of California has been abandoned until after the war, on advice of the government. Only such work as is deemed absolutely necessary is to be carried out. The Humboldt State Normal school will not go ahead this year, nor will the San Jose Normal auditorium, or the administration building at Norwalk. The first group of buildings for the Pacific Colony in Los Angeles county, doubtless will be started this year, as will also necessary buildings at the various state hospitals.

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. MCNAUGHER

ROBERT W. HUNT & CO., ENGINEERS

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BUILDING FOR ENTERPRISE ELECTRIC COMPANY, SHOWING APPLICATION OF PABCOAT, THE STONE VENEER, TO INTERIOR WALLS

Using Pabcoat by the Air-Spray Method

Just as cement is applied to the exterior or interior of a concrete or brick wall by the compressed air process, so is Pabcoat—the stone veneer—manufactured by the Paraffine Companies, air-sprayed onto the interior or exterior of a building—there to remain for a practically endless period.

Architects, engineers and contractors of San Francisco and the bay cities are manifesting keen interest in the recent demonstrations which the Paraffine Companies have been giving at the new building of the Enterprise Electric Company on Mission street, between Seventh and Eighth streets, San Francisco.

The purpose of the demonstration was to actually show how the owners were saving, at a very conservative estimate, 30 per cent in the cost of painting the building. Nearly every one who visited the job was particularly interested in seeing how one application of Pabcoat by the air-spray method made a finished job equal to two coats applied by hand and at a great saving in time.

The adaptability of Pabcoat to practically any surface and its well-known fire-retardent qualities, also caused a great deal of favorable comment.

The designers and engineers of the building are Messrs. MacDonald & Kahn, and the painting contractor is J. A. Mohr & Son.

Alterations to Court House

The County Commissioners have decided to tear down the upper walls of the Court House at Winnemucca, Nevada, put a roof over the first story and arrange the lower offices so they will do until the Legislature meets and votes sufficient money for a new Court House. The old building was recently damaged by fire.

It is reported that Mr. F. J. DeLongchamps, architect, Nixon building, Reno, has prepared plans for moving the hotel at Goldfield to Winnemucca.

San Francisco School Work

The Bureau of Architecture, City Hall, San Francisco, is preparing plans for a new school building to be erected in the Richmond District. The Bureau is also preparing plans for alterations and addition to the Parkside School to cost $2500. Plans have also been prepared and work is to be done by day labor, for alterations to the Washington School at an estimated cost of $9000.

To Alter Hotel Into Club Rooms

The Union League Club is negotiating for a lease of the New Poodle Dog Cafe and hotel building at 117 Mason street, San Francisco, which institution was recently closed by the authorities. The building is a seven-story Class "A" structure and if the club obtains possession of it, plans will be prepared by Mr. T. Paterson Ross, 310 California street, for extensive alterations.

He's Painting the Modern Way

Applying PABCOAT with a spraying machine instead of a brush, and in a *fraction of the time*, at a *fraction of the cost.*

PABCOAT INSURES PROTECTION AGAINST FIRE as well as unequaled protection against weather, sun, fumes and dampness.

Because of constantly rising paint prices, PABCOAT is taking the place of lead and oil paints, and at *much lower cost*, on industrial, railroad, mining and general construction work.

PABCOAT will adhere to practically any surface and forms a coating that will not *crack, blister or peel.* It may be applied with a brush as well as sprayed.

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Architect's Fee

In Ohio an architect was retained by county authorities to remodel certain county buildings. After the plans were prepared it was decided not to go on with the work. Some two years later a new building was decided upon and as the architect had presented no bill for the first service he was employed. When the building was finished and the architect's fee paid, he presented a bill to the county for the previous service. The commissioners now in office considered one-third the bill would be fair and it was so settled.—Western Architect.

San Diego Theatre

Mr. A. C. Martin, 430 Higgins building, Los Angeles, has prepared plans for a one-story Class "A" theatre building, 60x120, to be erected at Eighth street and Broadway, San Diego, for a syndicate of San Diego capitalists. The building will contain an auditorium, to accommodate 1200 people; entrance lobby, rest rooms, and offices. It will have concrete and brick walls, tile floor in the lobby, ornamental entrance, and special lighting features.

"Faith" Equipped with Illinois Valves

According to Mr. J. J. Krueger, San Francisco representative of the Illinois Engineering Company, the new concrete steamer "Faith" is equipped with high-pressure globe and angle valves as well as non-return stop and check valves, manufactured by the Illinois Engineering Company. The installation was made in record time and is reported to be giving full satisfaction.

Concrete Shipyard for Bryn Mawr

The recent announcement that the American Concrete Pipe & Shipbuilding Company had selected Bryn Mawr on the south shores of Lake Washington for the site of the new plant, has added another shipbuilding concern to Seattle's large industry in this line.

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ARMCO
pledged to
National Service

"Let there be an end to democracy," is the cynical challenge of peace-destroying, liberty-hating Prussianized Germany.

"Make the world safe for humanity," is the ringing answer of all peace-loving, liberty-worshipping nations.

And now the vast resources and constructive genius of America are being marshalled to crush German ruthlessness with a superior force of arms, men, supplies, aeroplanes, and transports.

Armco (The American Rolling Mill Company) stands pledged to turn its whole productive energy and capacity to the purposes of the nation and our brave allies until complete victory is achieved and the evil doctrine, "might is right," is forever banished.

ARMCO stands for— American Ingot Iron, the most perfect iron from the standpoint of purity, density, evenness—all physical qualities which make for rust resistance, superior welding and enameling properties, high workability and electrical conductivity.

ARMCO stands for— One of the most modern and complete manufacturing equipments utilized in the fabrication of high-grade metals.

ARMCO stands for— A working organization exceptional in ability and spirit—banded and held together under the benevolent policy of the square deal for every man—actuated from president to factory hand by common loyalty, purpose and understanding.

ARMCO stands for— National service and 100% Americanism both during and after the war.

The more the Nation asks of us, the more we must ask the indulgence of those manufacturers who have been accustomed to utilize Armco Iron as the basic material for their sheet and plate metal parts.

When normal conditions are restored, we shall make every endeavor to supply customers' needs with the QUALITY PRODUCTS and SERVICE that the Armco name and trade-mark stand for.

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The trade mark ARMCO carries the assurance that iron bearing that mark is manufactured by The American Rolling Mill Company with the skill, intelligence and fidelity associated with its products, and hence can be depended upon to possess in the highest degree the merit claimed for it.

THE AMERICAN ROLLING MILL COMPANY
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Licensed Manufacturers under Patents granted to the International Metal Products Company

ARMCO Iron Sheets, Roofing, Pipe, Gutter and Metal Lath

Pacific Coast Sales Office — Monadnock Building, San Francisco; other Branch Offices in New York, Chicago, Pittsburgh, Cleveland, Detroit, St. Louis, Cincinnati, Atlanta, and Washington, D. C.

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Our most particular attention is given to prompt and skillful handling of all electrical work of any nature with "QUALITY AND SERVICE GUARANTEED."
Our nation-wide organization and large experience in this field assures you always of fair estimates and absolute satisfaction.
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Phone Market 134

Oregon Engineers to Organize Club

The engineers of Portland are again considering the question of an engineers' club. There has been a growing demand for such an organization for several years, and numerous half-hearted attempts toward its formation have been made since the Portland Technical Club, after a life of but six months, passed quietly away about five years ago.

For two or three months at a time on various occasions the engineers have banded together for the purpose of meeting at weekly luncheons at the hotels, and though these meetings were greatly enjoyed, and were of noticeable help in keeping up the interest in engineering matters and broadening the acquaintance of those attending, there came a time each year when the committee in charge decided that the results no longer warranted the effort, and discontinued the series.

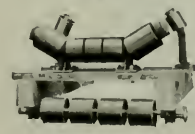
President Nunn of the Northwestern Society of Highway Engineers, at the July meeting of that society, in connection with the Portland Association of Members of the American Society of Civil Engineers and the Oregon Society of Engineers, appointed a committee to act with like committees from the other societies in the formation of a club and the securing of suitable quarters.

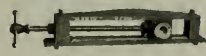
Pottery Plant Burned

The extensive pottery plant at Lincoln, California, of Gladding, McBean & Company, was recently destroyed by fire, entailing a loss of several hundred thousand dollars. Temporary frame buildings will be put up as an emergency measure until after the war, when permanent fireproof structures will be built.

Oakland School Buildings

Messrs. Reed and Corlett, Oakland architects, are preparing plans for three manual training buildings for the Oakland Board of Education. Also plans have been drawn for three temporary neighborhood schools, each building to cost $4500.





How about it!

Don't you think that a concern that has spent about **40 YEARS** at it, ought to come pretty near being able to make this class of machinery to suit **You?**

Meese & Gottfried Company

ENGINEERS AND MANUFACTURERS

SAN FRANCISCO
SEATTLE
PORTLAND
LOS ANGELES

More Ships to Be Launched

A suggestion that came from the men of the Los Angeles Shipbuilding and Dry Docks Company, that Labor Day this year be another launching occasion, has been received with enthusiasm by shipbuilders in the West, and as a result the day promises to equal the Fourth of July in the number of ships launched.

Vice-President Piez, while at Los Angeles, visited the Los Angeles Shipbuilding and Dry Docks Company, and it was there that the Labor Day launching carnival was suggested.

When Mr. Piez went to San Francisco later, on his way to Portland, Ore., he discussed the proposal with shipbuilders of the Golden Gate. Mr. J. J. Tynan, head of the Union plant of the Bethlehem Shipbuilding Corporation, Ltd., held a conference with labor leaders of the district and announced afterward that on Labor Day San Francisco and Oakland yards will launch eighteen ships.

The Los Angeles Shipbuilding and Dry Docks yard promises that six vessels will go over on Labor Day, as compared with three on July 4. So if these promises are made good, twenty-four vessels already are assured for the Labor Day carnival of launchings.

Housing Architects Appointed

The Bureau of Industrial Housing and Transportation of the Department of Labor announced the following additional appointments in connection with the housing projects:

Niles, Ohio, architect, Mr. George H. Schwan, People's Bank building, Pittsburgh, Pa.

Hammond, Ind., architect, Mr. J. C. Llewellen, 38 Dearborn street, Chicago, Ill.

Bethlehem, Pa., architect, Mr. A. W. Leh, Post Office building, South Bethlehem, Pa.

Sharon, Pa., architect, Mr. George H. Schwan, People's Bank building, Pittsburgh, Pa.

Warren, Ohio, architect, Mr. George H. Schwan, People's Bank building, Pittsburgh, Pennsylvania.

Lowell, Mass., architect, Henry Lawrence Rourke, Lowell, Mass.

Portsmouth, N. H., architects, Messrs. Allen & Collens, 40 Central street, Boston, Mass.

Elizabeth, N. J., architect, Mr. Chas. W. Oakley, 1259 Clinton place, Elizabeth, N. J.

Aberdeen, Md., architects, Messrs. Still, Buckler & Fenhagen, Baltimore, Md.

New Castle, Del., architect, Mr. Chas. C. May, 15 E. 40th street, New York City.

Lowell, Mass., architect, Mr. James H. Ritchie, 8 Beacon street, Boston, Mass.; town planner, Mr. Warren H. Manning.

Mr. R. A. Petit has recently opened offices in the Sharon building, San Francisco, having been sent here from Washington as Pacific Coast manager of the National Housing Corporation.

San Jose Factory

Mr. Benj. G. McDougall, Sheldon building, San Francisco, made the architectural plans for the first unit of the Figprune Cereal Company's new fac-

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tory, to be erected at Fourth and Lewis streets, San Jose. Mr. J. S. Bogart, Mills building, is the construction manager.

Fourth Liberty Loan

In preparation for the Fourth Liberty Loan campaign, expected to be waged from September 28 to October 19, the organization in the Twelfth Federal Reserve District has been completed. Governor James K. Lynch of this Federal district has announced the list of State chairmen who have formally accepted their appointments.

Following are the State chairmen: H. J. McClung, Phoenix, Ariz.; Charles R. Blyth, San Francisco, Northern California; Henry S. McKee, Los Angeles, Southern California; Montie B. Gwinn, Boise, Idaho; G. H. Taylor, Reno, Nev.; Edward Cookingham, Portland, Ore.; Heber J. Grant, Salt Lake City, Utah; Joseph A. Swalwell, Seattle, Wash.; L. Tenney Peck, Honolulu, Hawaii.

John A. McGregor will be chairman of the San Francisco Patriotic Liberty Loan Committee of One Thousand.

No official announcement of the amount of the fourth loan has been made.

Alex. Coleman Honored

Mr. Alexander Coleman, 706 Ellis street, San Francisco, has received state recognition by an appointment to the position of chairman of the California State Board of Plumbing Examiners (San Francisco county). The other members of the board are Dr. William Hasler, secretary, and Mr. Milton Lyons. The duties of the board are to pass upon all applications for licenses from both master and journeymen plumbers.

The honor conferred upon Mr. Coleman is very gratifying and is in the nature of an appreciation of his valuable work as a director of the National Association of Master Plumbers and president of the San Francisco branch of the same organization. Mr. Coleman is serving his sixth year as head of the local organization, while the directorship of the national body has been conferred upon him three successive terms.

Mr. J. R. Miller Busy

Mr. J. R. Miller, architect in the Lick building, San Francisco, has completed plans for a one-story brick emergency hospital building to be erected at the new Alameda plant of the Bethlehem Shipbuilding Corporation; also plans for a two-story and basement brick service building to be erected at the Bethlehem Alameda plant, and a one-story frame cafeteria, the two to cost $100,000. The cafeteria will accommodate 1500 men at one time.

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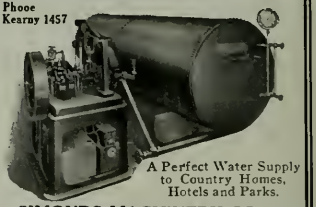

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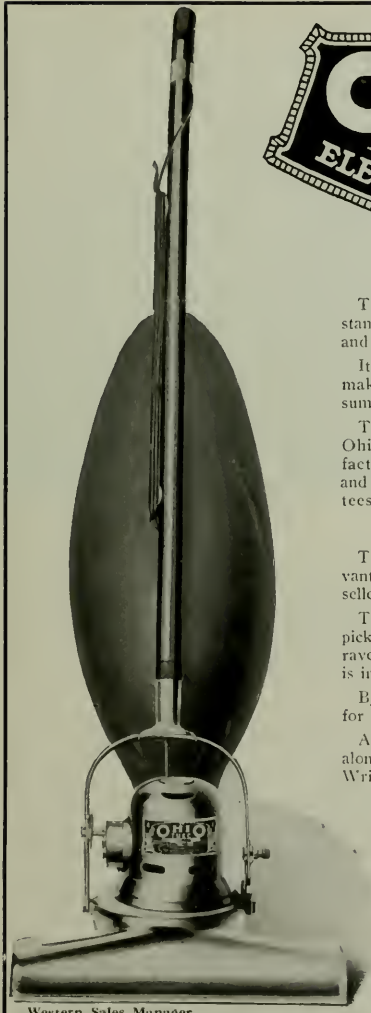

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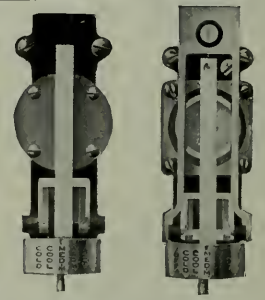

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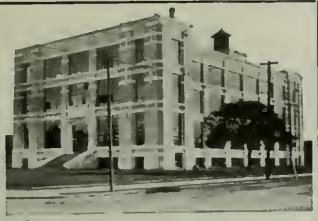

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Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD

Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.

FLUMES

California Corrugated Culvert Co., West Berkeley, Cal.

FURNACES—WARM AIR

Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.

Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE EQUIPMENT

Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

GARAGE HARDWARE

The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES

Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GLASS

W. P. Fuller & Company, all principal Coast cities.
Fuller & Goepp, 34 Davis St., San Francisco.

GRADING, WRECKING, ETC.

Dolan Wrecking & Construction Co., 1607 Market St., San Francisco

GRANITE

California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

GRAVEL AND SAND

California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Grant Rock & Gravel Co., Cory Bldg., Fresno.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

HARDWALL PLASTER

Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE

Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.

Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.

HEATERS—AUTOMATIC

Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

HEATING AND VENTILATING

Gilley-Schmid Company, 198 Otis St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

HEAT REGULATION

Johnson Service Company, Rialto Bldg., San Francisco.

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Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
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Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

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INSPECTIONS AND TESTS

Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE

J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS

A. Falvy, 578 Sutter St., San Francisco.
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

LANDSCAPE ARCHITECTS

Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.

J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS

MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL

Pacific Building Materials Co., Underwood Bldg., San Francisco.
Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

LIGHT, HEAT AND POWER

Great Western Power Company, Stockton St., San Francisco.

LIGHTING FIXTURES

Roberts Mfg. Co., 663 Mission St., San Francisco.

LIME

Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

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D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
Paraffine Companies, factory in Oakland; office, First St., San Francisco.

LUMBER

Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
California Redwood Association, 216 Pine St., San Francisco.

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American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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METAL LATH

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Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
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California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.

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Palm Iron & Bridge Works, Sacramento.

C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.

Schreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.

Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

Sartorius Company, Inc., 15th and Utah Sts., San Francisco.

West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PACKING

Plant, Rubber & Asbestos Works, San Francisco.

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Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
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Gilley-Schmid Company, 198 Otis St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

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Gilley-Schmid Company, 198 Otis St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
Mark-Lally Co., 235 Second St., San Francisco, also Oakland, Fresno, San Jose and Stockton.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Sanitary Mfg. Co., 149 Bluxome St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

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Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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Aspromet Company, Hobart Bldg., San Francisco.

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Ocean Shore Iron Works, 558 Eighth St., San Francisco.

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Central Iron Works, 621 Florida St., San Francisco.

Dyer Bros., 17th and Kansas Sts., San Francisco.

Golden Gate Iron Works, 1541 Howard St., San Francisco.

Mortenson Construction Co., 19th and Indiana Sts., San Francisco.

Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.

Palm Iron & Bridge Works, Sacramento.

U. S. Steel Products Co., Rialto Bldg., San Francisco.

Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

Southern California Iron and Steel Co., Fourth and Mateo Sts., Los Angeles.

Vulcan Iron Works, San Francisco.

Western Iron Works, 141 Beale St., San Francisco.

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S. F. Bowser & Co., 612 Howard St., San Francisco.

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United Materials Co., Crossley Bldg., San Francisco.

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Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
Keller & Coyle, 233 Grant Ave., San Francisco.

WATER HEATERS—AUTOMATIC
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Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland & Co., Inc., Boston, Mass. Hambly & Sons, agents for San Francisco and Los Angeles.
Imperial Co., Monadnock Bldg., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Building Materials Co., 523 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

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"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

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WIRE FENCE
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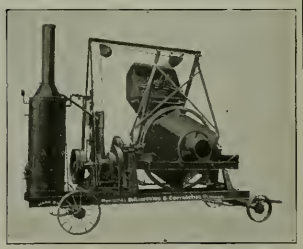

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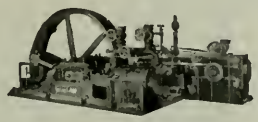

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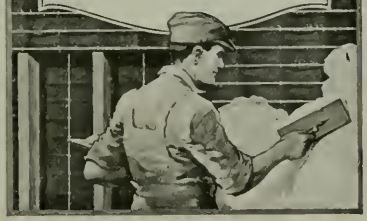

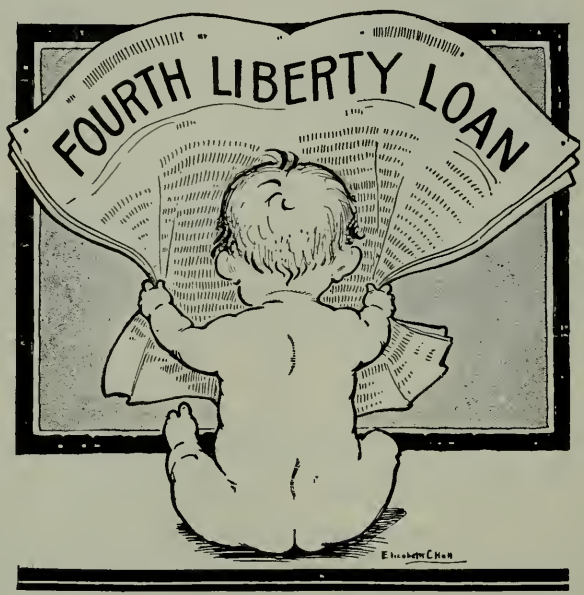

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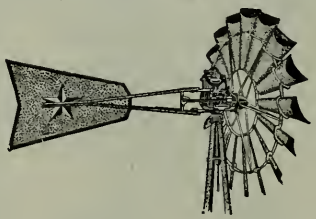

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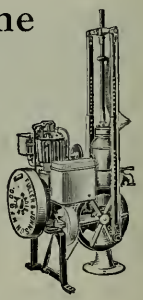

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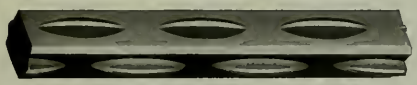

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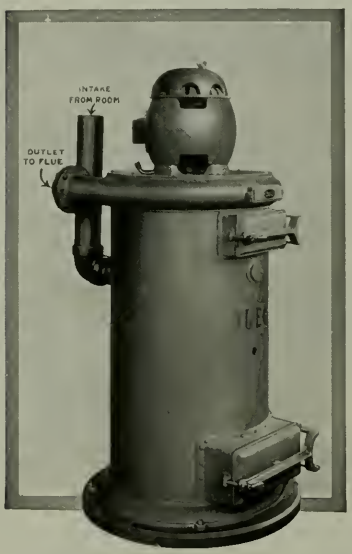

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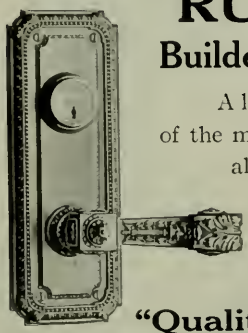

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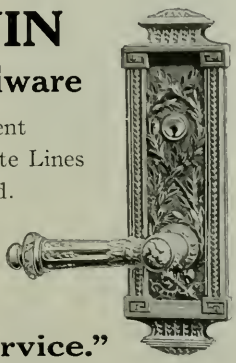

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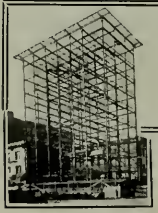

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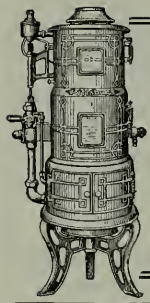

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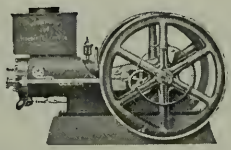

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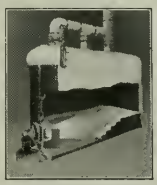

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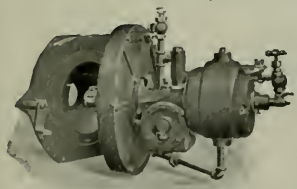

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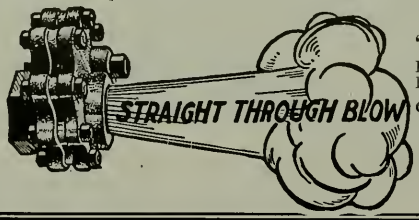

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THE
Architect and Engineer
Of California

Volume LIV. Number 3.

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PROPOSED STATE BUILDING
SAN FRANCISCO CIVIC CENTER
BLISS & FAVILLE, ARCHITECTS

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

SEPTEMBER, 1918 Vol. LIV. No. 3

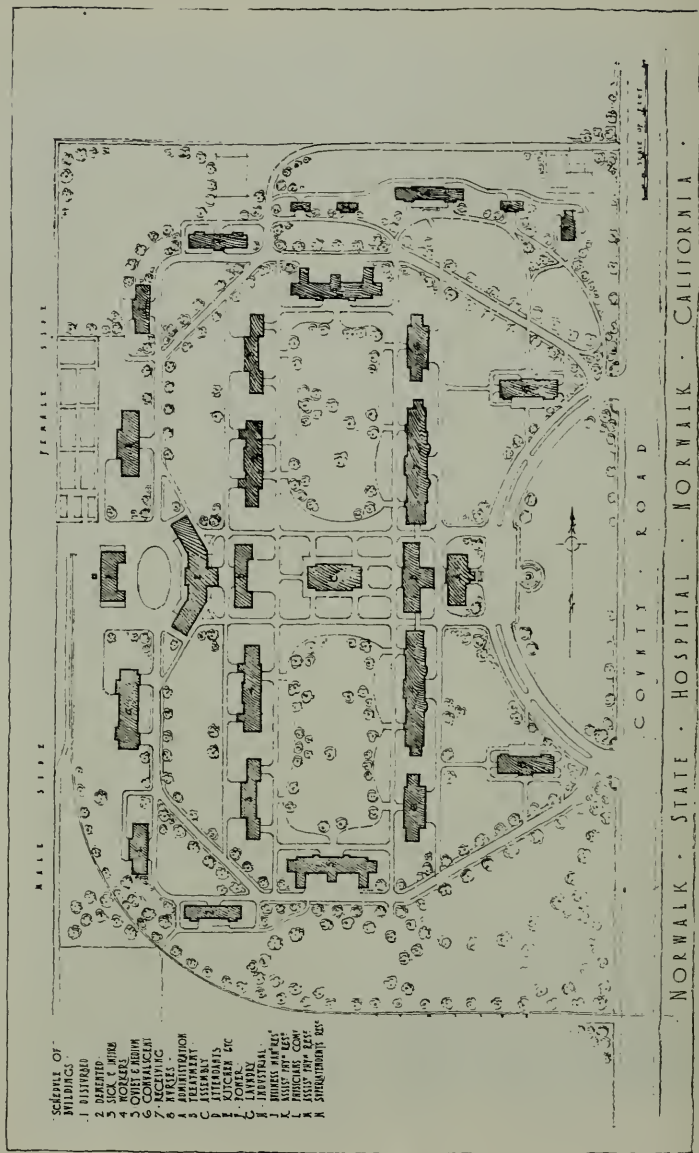
Recent Work from the Office of the California State Architect

By B. J. S. CAHILL, Architect

BEFORE undertaking the following brief review of the many sided architectural activities of the State of California in the past few years, Mr. Geo. B. McDougall, the State Architect, made it very plain to the writer that he emphatically desired all possible credit and acknowledgment to be given to his staff at the office of the Bureau of Architecture in Sacramento. As this very generous attitude is none too common among our architects, I mention it at the outset, although Mr. McDougall's intention was that I should lay emphasis on the work of his staff as though that were the natural thing to do. Of course, it really is the natural thing to do, but it it not the customary thing. Many an architect throughout the country does more private business in a year than the whole state of California, and yet has less personal knowledge and direction of the work under his charge than the State Architect. But he never dreams of giving public credit to his subordinates, however much they may really be responsible for the excellence of the output for which he collects both business profit and professional credit. I have taken it upon myself, therefore, to give Mr. McDougall away in this particular because this wish of his was so sincerely and modestly expressed that I am convinced he expected me to act on it without divulging its origin.

MANOR HOUSE, MENDOCINO STATE HOSPITAL

And, indeed, I have heard from private sources and on several occasions of this little group of clever and enthusiastic men in the State Architect's office, who have developed something of the *esprit de corps* of a famous atelier out of the usually humdrum conditions of


MALE SIDE
FEMALE SIDE
COUNTY · ROAD
NORWALK · STATE · HOSPITAL · NORWALK · CALIFORNIA ·
SCHEDULE OF BUILDINGS
1 DISTURBED
2 DEMENTED
3 SICK & INJURY
4 WORKERS
5 QUIET & AGAIN
6 CONVALESCENT
7 RECEIVING
8 NURSES
A ADMINISTRATION
B TREATMENT
C ASSEMBLY
D ATTENDANTS
E KITCHEN ETC
F POWER
G LAUNDRY
H INDUSTRIAL
J BUSINESS MAN'RES'
K ASSIST'NT'S RES'
L PHYSICIANS COM'
M ASSIST'NT'S RES'
N SUPERINTENDENTS RES'

KITCHEN BUILDING, NORWALK STATE HOSPITAL

a political bureau, the last place in the world where this happy state of things might be expected.

The work of the State Bureau here shown proves very clearly the advantages of this unique situation. As a rule the professional work of a Bureau, whether Federal, State or Municipal, is actually both below par and behind the times. The one word that describes it best is perfunctoriness—a word which the dictionary defines as "doing a thing merely for the sake of getting through." And this is the very last word one would think of using in connection with the many varied buildings here shown. For the most superficial glance over them reveals a fund of fresh and original ideas all nicely tuned to the problems in hand and developed with knowledge, fertility and thoughtfulness, not always equaled and rarely excelled in the best offices of private practice. Considering that the salaries paid are not as large as paid in the offices of our leading architects, the State of California may be complimented on its unique and excellent output.

And while on the subject of private and public work it is interesting to note that the State Bureau of Architecture through its excellent time system has kept track of the actual expense of all work turned out so that the private practitioner can note the cost of drawings and superintendence for each separate piece of work.

This is necessary in state work in order to apportion the outlay on each institution served, whereas in private work, except in the larger and more highly organized offices, it hardly pays to do this.

It will be noted that the buildings have a remarkable range of purpose but that in the main they serve strictly utilitarian ends and that the pro rata allotment of design as distinguished from construction represents almost the minimum. Therefore, whatever architectural expressions have been wrought into the

ENTRANCE TO ATTENDANTS' QUARTERS, NORWALK STATE HOSPITAL

KITCHEN BUILDING, NORWALK STATE HOSPITAL

LAUNDRY, NORWALK STATE HOSPITAL

POWER HOUSE, NORWALK STATE HOSPITAL

TOWER, AGNEW STATE HOSPITAL

structures have been managed rather by mass composition and surface treatment than by the employment of applique motives derived from the orders and classic precedent. The result consequently has, in most cases, brought out the best elements of directness and simplicity, quite devoid of crudeness and surprisingly charged with character and charm. And this is the real test of capacity in design.

SIDE ENTRANCE DETAIL
AGNEW STATE HOSPITAL

Assisting the State Architect, Mr. Geo. B. McDougall, in the solutions of these various problems, are Mr. James S. Dean, Assistant State Architect; Mr. Charles F. Dean, Chief Architectural Designer; Messrs. A. R. Widdowson and R. E. Backus, Assistant Architectural Designers; Mr. Geo. J. Adams, Chief Draftsman.

Owing to a congestion of work in the State Bureau, one of the buildings shown, the Agricultural exhibit at Sacramento, was designed and is being carried out by the State Architect in cooperation with two San Francisco architects, Messrs. Sylvain Schnaittacher and Edgar A. Matthews.

The following notes are given on each building in the order in which they are illustrated:

THE STATE BUILDING, to house the various State Commissioners, etc., shown on the frontispiece, is the work of Messrs. Bliss & Faville and has been illustrated before in these pages. The suggestion that a monumental building to house the State Departments should go up on this particular end of the Civic Center was made exclusively by the writer as far back as 1909, three years before the Civic Center was actually voted upon to be carried out.

Although the architectural work of the forty or more State institutions is done under the charge of the State Architect, on special occasions for monumental buildings or when desired for the best interest of the State, the Board of Control, with the approval of the Governor, may arrange a public competition to select the architect for the particular work in question. It was by this procedure that the architects for the State Building on the Civic Center were selected, and a similar competition is now under way to determine the architect for the new State Library and Courts building and the new State Office building to go up at a total cost of $3,000,000 and to be situated on the two blocks opposite the State Capitol in Sacramento.

THE NORWALK STATE HOSPITAL FOR THE INSANE. These buildings give the impression of modern English work done in the simplest, straightforward manner, with "tapestry brick" walls and substantial tile roofs very agreeably relieved with well-placed dormers in the kitchen group and actually free from all trace of fussy or capricious features, yet soothing and home-like in character, and well calculated to induce the curative and sedative conditions essential to this kind of institution.

DETAIL, END OF TREATMENT
BUILDING, AGNEW STATE HOSPITAL

ASSEMBLY HALL AND CLUB ROOMS, STATE HOSPITAL, AGNEW

AGNEW STATE HOSPITAL FOR THE INSANE. A most interesting group of picturesque stuccoed pavilions relieved with red patterned brick and roofed with clay tiling. The designers' interest and enthusiasm is apparent in all this work and may have led to a trifle too much design just as the Norwalk group shows, if anything, a trifle too little. The extension of the deep brick frieze band of the low pavilion across the base story of the tower may seem unfortunate to some. It might look better if this band were retained on the curtain walls but not carried around the buttresses and pilasters. The woodwork of the portico and balconies is particularly appropriate in character. The difficulties of free design of this type far transcend the problems of formal work in an accepted style.

THE STOCKTON STATE HOSPITAL WARDS shown here and done in stucco and tile, one relieved with a touch of half-timbered work and the other featured with large bays, are both of them admirable in their restful simplicity and agreeable setting. They strike a happy mean between the architectural severity and the architectural exuberance of the two preceding groups.

THE SOUTHERN CALIFORNIA STATE HOSPITAL is most picturesquely situated and the Receiving building has the charm and restfulness of an old mission without in the least aping mission detail. The Typical cottage is rather redundant in the triple iteration of the same gable. Seeing that the central one has a protruding bay almost as wide as the room it flanks, one feels that the gable over it might very well have been omitted, giving a deck roof to the extension; or else the roof might have extended forward and covered the half octagon extension with a hipped roof so that the bay disappeared or became absorbed in the central wing.

ADMINISTRATION BUILDING, AGNEW STATE HOSPITAL

BUILDING FOR THE DISTURBED AND VIOLENT, AGNEW STATE HOSPITAL

WARD BUILDING, STATE HOSPITAL, STOCKTON

WARD BUILDING, STATE HOSPITAL, STOCKTON

RECEIVING BUILDING, SOUTHERN CALIFORNIA STATE HOSPITAL

TYPICAL COTTAGE, SOUTHERN CALIFORNIA STATE HOSPITAL

INFIRMARY, NAPA STATE HOSPITAL

HOSPITAL COTTAGE, CALIFORNIA SCHOOL FOR GIRLS, VENTURA

TYPICAL COTTAGE, CALIFORNIA SCHOOL FOR GIRLS, VENTURA

MEN'S DORMITORY, HOME FOR ADULT BLIND, OAKLAND

PHOTOGRAPHIC VIEW OF STATE ARMORY, LOS ANGELES (ON THE RIGHT). ARCHITECT'S DRAWING OF SAME BUILDING (BELOW)

THE INFIRMARY OF THE NAPA STATE HOSPITAL is a thoroughly good piece of design which in spite of its amplitude and the difference in treatment of its central pavilion, admirably sustains its unity of composition.

THE VENTURA SCHOOL FOR GIRLS is a plain, bold treatment in the Colonial spirit of pavilions, rather larger than is usually appropriate for the use of so delicate a style. Hence one notes the propriety of the large weathering given to the shingles, and the employment of an attenuated Doric order on the small flanking wings of one building and at the portals and central low window of the other.

THE LOS ANGELES ARMORY as shown here was designed under Mr. Jno. W. Woolletts' administration and as it has subsequently been carried out. As each picture shows a different view of the same building it is not possible to compare them. The design as rendered in Mr. Bonestell's drawing is particularly strong. A great inner drill hall is clearly indicated in the large central gabled pavilion. This feature is nowhere visible in the photograph of the completed building. The ponderous Doric portal on the side seems too massive to be properly secured by the rather thin and sleek brick walls that make up the mass of this front. Nor do the window heads of the second floor particularly recommend themselves either on structural or esthetic grounds. They are ostensibly of stone but they do not seem to bear on anything. A so-called slip sill is logical enough, but a slip lintel seems somewhat of an absurdity, moreover the precise value of the white spots over these windows is decidedly debatable.

THE MEN'S DORMITORY IN THE HOME FOR ADULT BLIND IN OAKLAND is decidedly reminiscent of the Administration building at Agnew and reveals the same hand. In both cases the out-flanking buttresses might have been made less obtrusive or omitted altogether. This building is more direct and more satisfactory although it cannot be denied that the Agnews Pavilion shows much more originality and invention. In the latter building the one vertical mullion in the round-headed window and the fact that the arcade wall comes out to the face of the flanking pavilions are very small matters; none the less they arrest critical attention.

THE RECEIVING BUILDING OF THE NAPA STATE HOSPITAL is a wonderfully interesting and attractive piece of group designing with a quaint charm quite unusual in the average building of this type. The professional architect, in particular, will realize what a lot of study has been put into this building and it is to be regretted that lacking all plans we are compelled to confine ourselves to mere surface impressions.

THE SUPERINTENDENT'S RESIDENCE, FOLSOM STATE PRISON, with its rolled roof ends and random shingling, reminiscent of thatch, has a touch of monotony in its one roof plane and might be a little stiff in its exact symmetry of plan outline were it not for the ingenious variety displayed in the protruding wing; but being very obviously the porch and entry while the other is a living room. None the less, there's an undeniable largeness and freshness of treatment about this house which distinguishes all this work and is a delightful contrast to the shams and prettiness of so many of our suburban bungalows. No doubt the habit of designing group buildings for large and widespread institutions develops this breadth of manner. If our town residences could absorb some of this quality how immeasurably it would elevate the paltry standards now so painfully prevalent.

RECEIVING BUILDING, STATE HOSPITAL, NAPA

SUPERINTENDENT'S RESIDENCE, STATE PENITENTIARY, FOLSOM

GIRLS' NURSERY, STATE HOME, SONOMA

MAIN CENTER MOTIF, NORMAL SCHOOL, SANTA BARBARA

EXTERNAL CLOISTER, NORMAL SCHOOL, SANTA BARBARA

CAFETERIA, NORMAL SCHOOL, SANTA BARBARA

STATE NORMAL SCHOOL, CHICO

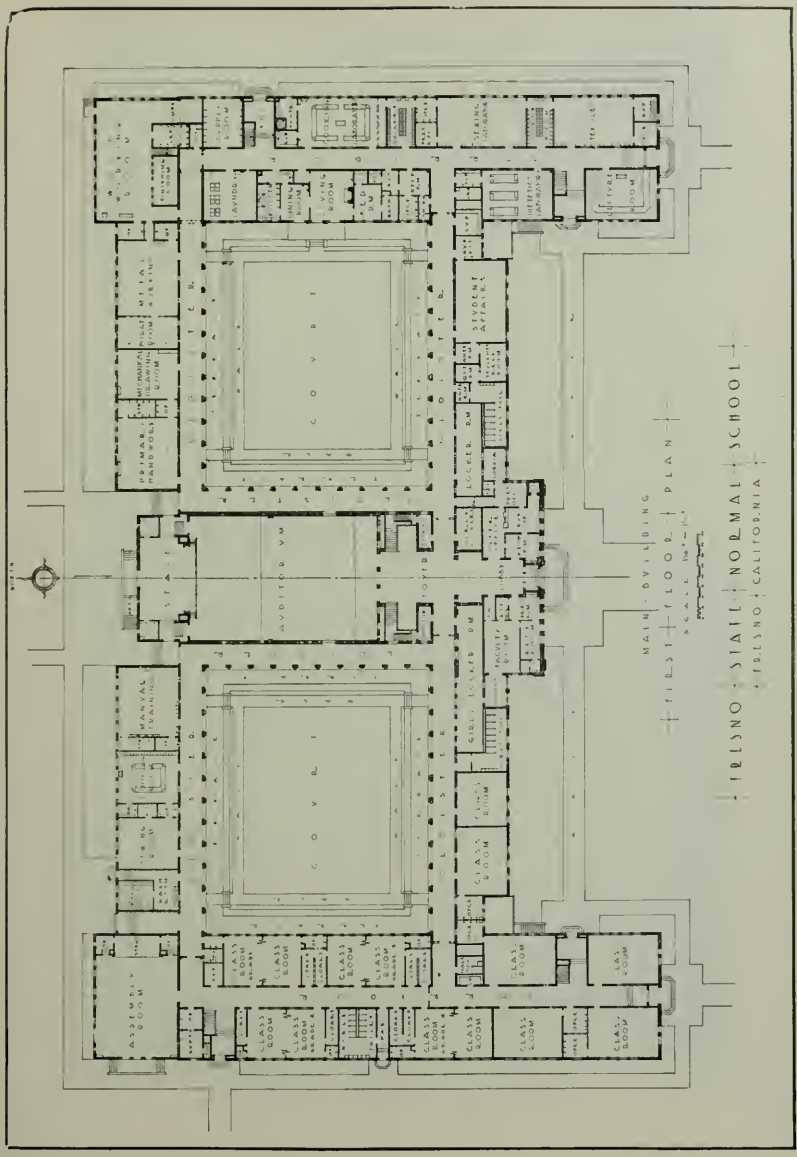
THE GIRLS' NURSERY, SONOMA STATE HOME, is another really splendid example of the directness and simplicity above alluded to. The reader will note how the large roof area is made interesting in texture by random and rounded shingling.

THE SANTA BARBARA NORMAL SCHOOL buildings here shown prove very clearly the wide range of sympathy developed in the State Office. For these structures have a decided pictorial attractiveness along Spanish Mission lines worthy indeed of the glorious setting of Santa Barbara the Beautiful. Here the mood developed is a blend of the romantic and the rustic. Nothing could be more inviting, more colorful or more fascinating than these bits of architectural scenery—the water pool in the shades of the towering Eucalypti, the high arcade smothered in greenery and the home-made pergola and vine poles in the shady lee of a white walled hacienda. Could one believe that this is the work of a State Bureau? The idea seems inconceivable until we grow to realize that it is none the less a fact.

THE CHICO NORMAL and other rural schoolhouses are particularly valuable because they offer sound solutions for the designer of small schools in remote districts where the unconscious work of the local builder is likely to be crude and forbidding, while the conscious designer, if any is available, is almost certain to be overdone or in bad taste. The simplicity, good sense and charm of these little schools both in arrangement and design are quite beyond praise.

THE FRESNO NORMAL SCHOOL group is a very interesting and even ambitious study in the use of brickwork, that is to say, brickwork for its own sake, and not brickwork to eke out classic design derived from stone and stone motives. The writer has often drawn attention to the immense superiority of brickwork done in simple, suitable designs of mass texture and surface carried all over and around each pavilion, as against the use of classic orders and cornice for the so-called fronts with brick used merely to fill out and economize on the sides and backs. There should be no side and back walls in a school house such as obtain on a fifty-foot city front. This of course, can be easily achieved by adopting some of the historical brick styles from Northern Italy, Holland or England, where brickwork has been carried to the limit of ingenuity and interest.

AVIATOR'S VIEW, STATE NORMAL SCHOOL, FRESNO, CALIFORNIA



GROUND PLAN, STATE NORMAL SCHOOL, FRESNO, CALIFORNIA

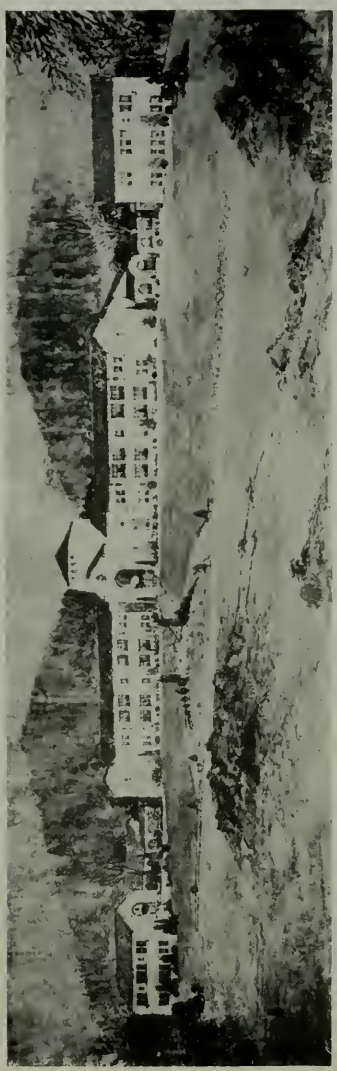
MAIN FACADE, STATE NORMAL SCHOOL, FRESNO

CENTRAL PAVILION, STATE NORMAL SCROOL, FRESNO

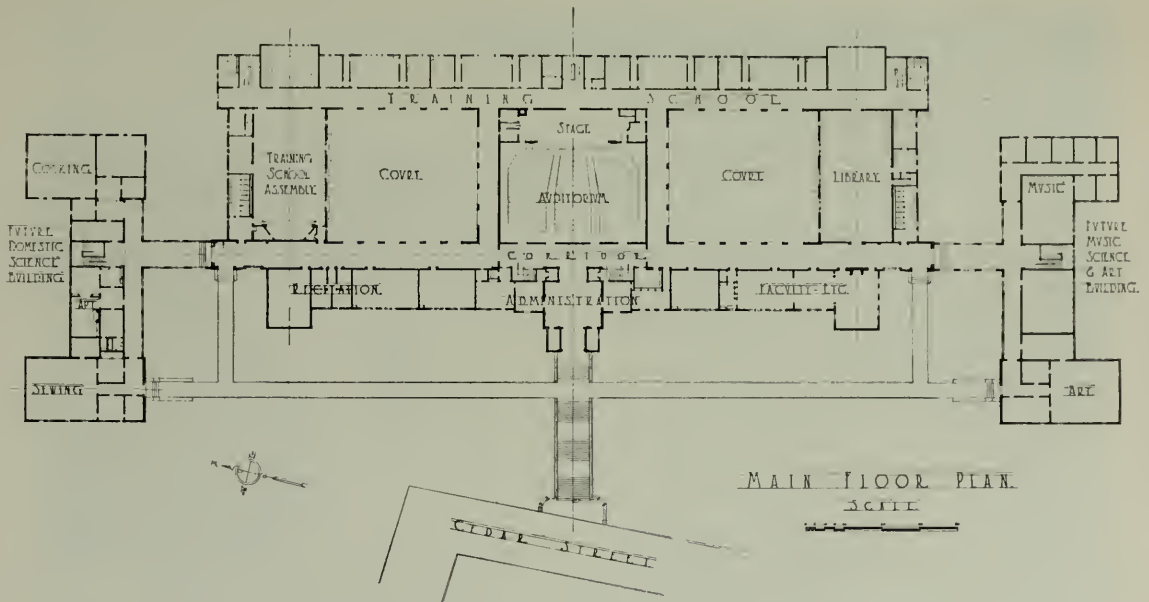
COURT, STATE NORMAL SCHOOL, FRESNO

AVIATOR'S VIEW, NORMAL SCHOOL, SANTA BARBARA

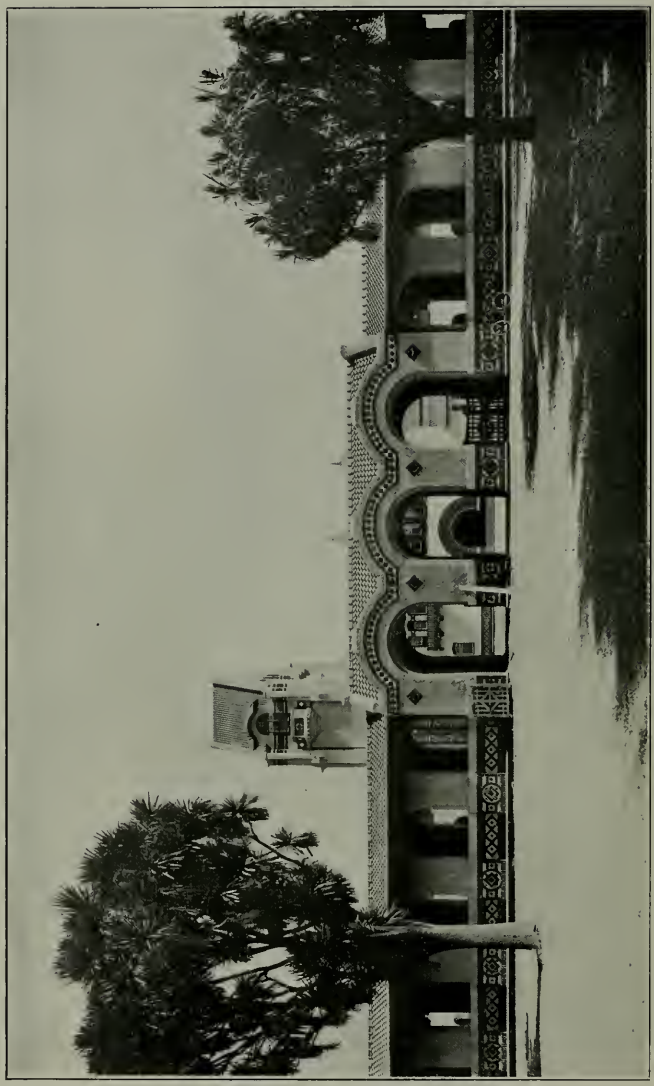
CLOISTER, SANTA BARBARA NORMAL SCHOOL



HUMBOLDT STATE NORMAL SCHOOL,
ARCATA, CALIFORNIA



HUMBOLDT · NORMAL · SCHOOL · ARCATA · CAL ·

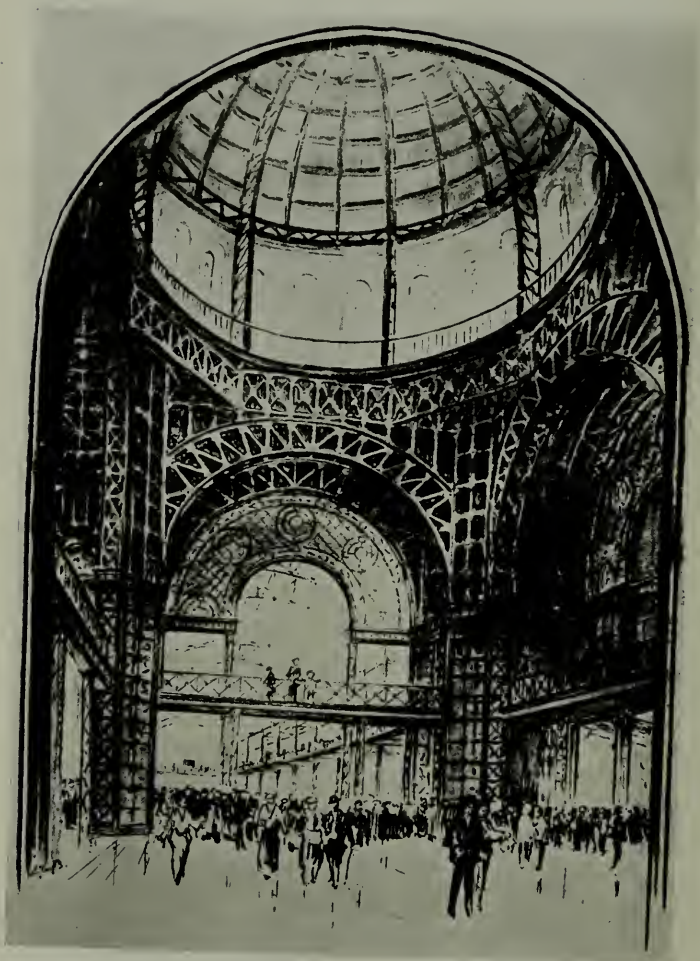


STATE NORMAL SCHOOL, SAN JOSE, CALIFORNIA

ENTRANCE, WOMEN'S CLUB BUILDING, STATE FAIR GROUNDS, SACRAMENTO

Barring a little monotony in the Court Arcade, this group is an admirable example of what can be done in brick, and without question the real structures convey far more pleasing impressions than do the photographs.

As a matter of fact, we do not, as a community, quite understand the use of brickwork, and perhaps one of the best proofs lies in the fact that our draftsmen play with the patterns of the surface as though they were designing a floor instead of a wall. All Dutch, Italian and English brick diaper patterns are based primarily on the need of bonding and are always a part of the structural disposition of headers and stretchers. Whereas, our designers too often arrange their joints with the sole view of creating agreeable panellings and patterns as though the surface had no integral part with the wall itself. This practice might be defended where brick is used merely as a veneer laid against and nailed or bolted into wood sheathing and there is defence for the practice where (as is usually the case) the surface brick is a different material to the body of the wall—face brick, as we say. The practice of ignoring bond conditions is growing and perhaps it is a modern parallel with the Renaissance device of using pilasters and orders on the face of a wall without regard at all to the beam and column conditions of structure from which these features originated. And here, perhaps, we touch on a profound law of development. Thoreau points out that the pursuits of one epoch become the pastimes of the next. As in hunting, for example. In architecture, we might say that the construction of one epoch



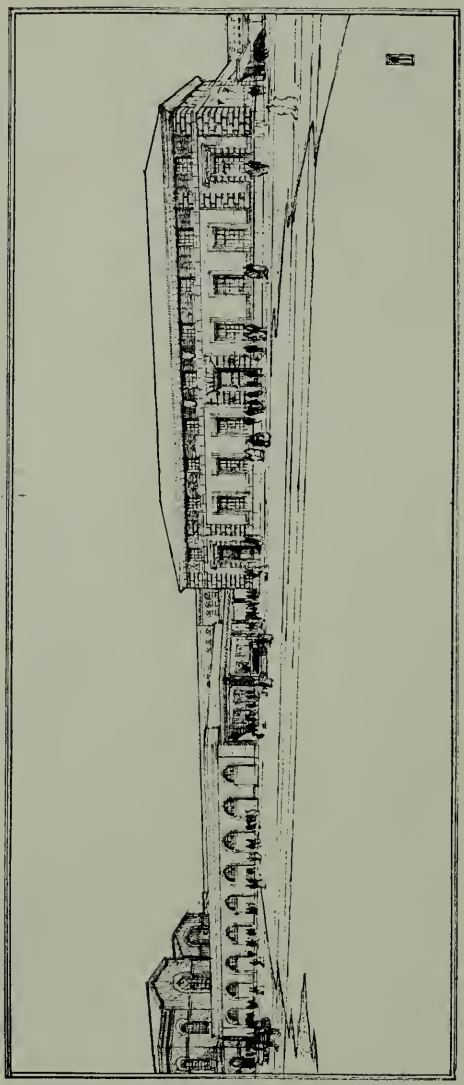
INTERIOR AGRICULTURAL PAVILION
STATE FAIR GROUNDS, SACRAMENTO

ELEVATION, AGRICULTURAL BUILDING, STATE FAIR GROUNDS, SACRAMENTO

END VIEW, AGRICULTURAL BUILDING, STATE FAIR GROUNDS, SACRAMENTO

PIER NO. 3, SAN FRANCISCO WATER FRONT
FRANK G. WHITE, CHIEF ENGINEER
J. D. HANNAH, CONTRACTOR

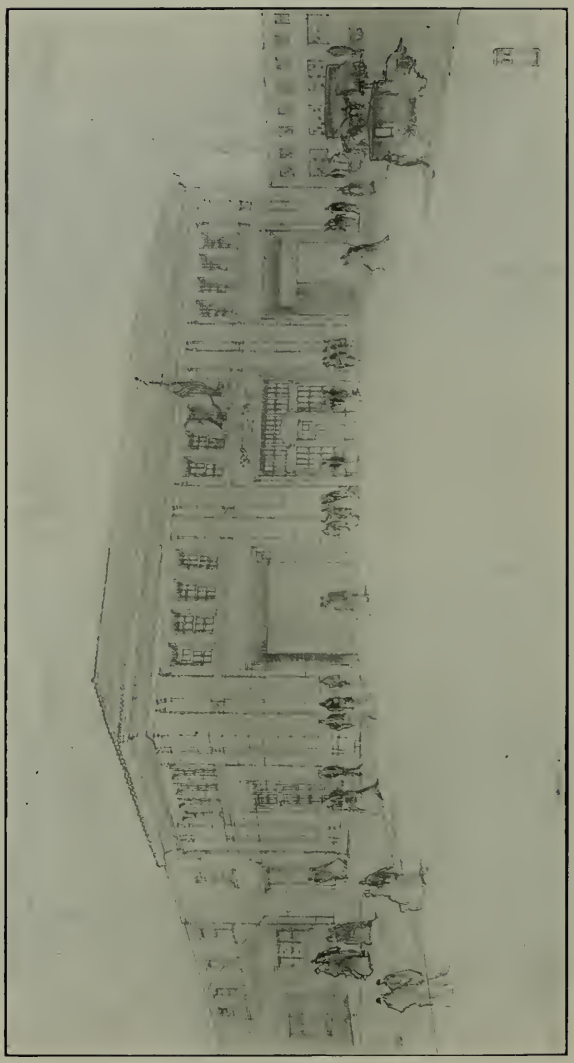
PHOTO SHOWS IMPROVEMENTS TO DATE IN ISLAIS CREEK SECTION



SKETCH, POST OFFICE BUILDING,
SAN FRANCISCO WATER FRONT

FERRY POST OFFICE BUILDING, SAN FRANCISCO

PIER 29, SAN FRANCISCO WATER FRONT
Built by Clinton Construction Company



SKETCH SHOWING MODERN DEVELOPMENT OF SAN FRANCISCO WATER FRONT PROPERTY

becomes the ornament of the next. In the case in point, we can at least petition for a certain moderation—a reasonable restraint in designing surface brick to escape the suspicion I have sometimes entertained that our draftsmen really couldn't tell what a brick was made for.

THE HUMBOLDT NORMAL SCHOOL AT ARCATA is finely situated and gives promise of splendid results, altho one hardly sees the necessity of stilting the lateral pavilions where they abut the central mass. By running the side roof straight into the tower, the portal facing front could also be reduced, something that it seems to need. Meantime the offset below the attic of the tower could be lowered also with advantage to the proportion and scale of this whole feature.

THE AGRICULTURAL EXHIBIT BUILDING, SACRAMENTO, from the designs of Messrs. Sylvain Schnaittacher and Edgar A. Matthews, associated with the State Architect, and now in course of construction, is a building of monumental dimensions and noteworthy conception. The exterior is modeled along the lines of the Byzantine basilicas of Northern Italy, while the interior exhibits an interesting, although unconscious, revival of the attempt to achieve a design from the naked members of structural steel without ornamental coverings or embellishments. When iron and steel were first used in bolted and welded sections, the Frenchman, Viollet le Duc was quick to appreciate possibilities of a new style in architecture, while the Englishman, Joseph Paxton, actually carried out immense structures in plain glass and iron to house the first International Exhibition (London 1851). In this building, however, the exterior walls are of light Sienna brick, with a roof of vari-colored tile and all molded work done in unglazed terra cotta to match the brickwork. The composition of this structure is indeed stately, as it should be, and the detail, where concentrated in its portals, of great richness and beauty. The aspect of the interior will be light, airy and spacious. In order to bring out and emphasize the graceful lines of the steel inner shell, an interesting and striking use will be made of the color that structural steel acquires when coated with the best preservative known, that is red oxide of lead. If structural steel lines can be turned to architectural account, why not also the utilitarian color? Esthetically, this fiery orange may prove an artistic triumph.

THE HARBOR FRONT BUILDINGS, including the FERRY POST OFFICE and WELLS FARGO building are familiar to San Franciscans. They are strong, dignified buildings and though not carried out quite in the spirit of the original designs, they serve their ends by the substantiality of their aspect and sane economy in the material and detail of their architectural composition. Altho one might deplore the fact that in such a long succession of structures lining the Embarcadero, some more unifying type of design was not adopted that would tie this fine sweep of buildings into one splendid and extended composition.

DINING HALL, SAN QUENTIN STATE PRISON

CELL BUILDING, STATE PRISON, SAN QUENTIN

ENTRANCE TOWER, FOLSOM STATE PRISON

TOWER OF FOLSOM PRISON, CELL BUILDING AND DINING HALL AT SAN QUENTIN STATE PRISON. These are both striking buildings, expressive of their purpose. The battered walls of the last mentioned gives a fine sense of strength but yields an unfortunately thin soffit in the large relieving arch which spans the battery of smaller arches below. Better were there no reveal here at all, the batter ending with a horizontal offset at the spring line, the gable end being in a perpendicular plane from this level up.

TOWER, MT. WHITNEY FISH HATCHERY

THE MOUNT WHITNEY FISH HATCHERY, built of cobble stones and one with the landscape, is a veritable tour de force and a most striking and picturesque building. At the back of ones head, somewhere, one gets the impression that the motif is Norwegian, and no doubt it is. When you learn that this building is a fish hatchery, for some quite unknown reason you instantly feel that it looks like one, altho I confess I have never seen a fish hatchery in my life. And this surely is a triumph of sympathetic and

NOTE.—The central tower of Agnew State Hospital, the receiving building of the Southern California State Hospital, the cell building and dining hall of San Quentin Prison, were all done during the regime of Messrs. Sellon and Hemmings, at that time the State Architects.

GENERAL VIEW, MT. WHITNEY FISH HATCHERY

appropriate designing and a splendid testimony to the versatility and skill of the Bureau of Architecture of the State of California.

* * *

We regret that lack of space prevents a more extended presentation of pictures, such as studies for the Whittier State School (the power plant and water tower) and several well-thought-out plans for small rural school houses.

The few examples of harbor work are of interest in that they show the commendable efforts of the State to better a much-neglected condition of affairs along the San Francisco water front. This work, however, is from the office of the State Department of Engineering (Harbor branch) and should not be confused or misconstrued as part of the work of the State Bureau of Architecture.

* * *

The Painting of Iron and Steel

A remarkable discovery respecting the painting of iron and steel surfaces has recently been announced from the Continent, and is fully worth the careful consideration of engineers. It is to the effect that a single coat of paint has been proved to resist the rusting of the metal more than either two, three or four coats. This is so distinctly contrary to accepted ideas on the subject that it seems to be almost fallacious; yet when we come minutely to examine all the details there certainly seems to be some fundamental reason for it, and, like many other new suggestions, it contains a good deal of truth.

The experimenters cleaned a number of iron plates and gave them one, two, three and four coats, respectively. When the paint was thoroughly hard, dry and seasoned the plates were exposed for twelve hours to a steaming process. Then the paint coat dissolved off and the metal was inspected. That which received a single coat was found to be still bright and uncorroded, while in the case where the four coats had been applied a layer of rust was evident upon it, and the other two examples displayed varying proportions of oxide, which was greater where three coats had been applied.—The Railway Engineer.

REST STATION, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect

A CITY PLANNING SUGGESTION
Chas. H. Cheney, Architect

An Architect in the War*

How He Found Unexpected Uses for His Special Knowledge

I RECEIVED an order one day in September to use every effort to find an especially good point from which we might be able to watch the enemy in his trenches, directly opposite ours at that part of the line. The trenches in this area were situated in very flat swampy land, a little spot on the famous Ypres salient, and quite naturally any point of vantage for observation was exceedingly difficult to find. All sorts of tricks were resorted to to get even a few feet in height above the surrounding country. Being so flat, it became a veritable swamp when the first cold weather and rains arrived, and dense fogs hung over the line for two or three hours every morning. Such a fog lay over the land on the particular morning that I was ordered to find a new O. P. Trenches, of course run through all types of territory, through farm-houses, through fields and at times through towns themselves, now, of course, very much demolished.

It was possible at times to find an old ruin, either one that the front lines passed through or just behind the front trenches, to use as an O. P. There was such a ruin about fifty yards back of our front trench. On this particular foggy morning I was given an opportunity to examine this farm at close quarters. Taking two of my men with me, we climbed out of the front trench, made our way to the farm through the dense fog, tripping over barbed wire here and there and falling into shell holes because of the bad light. Having been an architect before the war, I proceeded to examine the ruin very much as I would an old building at home with the idea of repairing it. It seemed to me that the bulk of the ruin was entirely too big for the amount of material on the site; in other words, I felt that there must still be a room inside, or cavity of some sort under the pile that was quite intact, so I sent one of my men back for a pick and crowbar to dig our way inside. We went to the side of the ruins facing our own lines to avoid observation by the enemy. The fog had just lifted after we reached the ruin, and we were compelled to remain there all day without food or water.

One of the interesting things that we noticed at the ruin was the effect of rifle fire on the sections of brick walls still standing and facing the enemy trenches.

The thousands of bullets that had been fired at that particular spot since the first day of the war had almost cut through the 16-inch brick walls, and the ground was quite covered with ragged pieces of rifle bullets that had been ricochetting from the ruin.

We made our way to an old outhouse at the back of the ruin and found the first evidence of the former occupants. There was a man in civilian clothes lying upon his face, and, of course, very much mutilated. Near his hand lay an old sporting rifle. There was a doorway quite near the body, but it was so jammed by wreckage that we could not force an entrance to the main building, and the only thing to do was to chisel a hold through the wall itself. After removing the body of the unfortunate owner of the farm, we set to work on the hardest 12-inch brick wall it was ever my task to try to remove. I have great respect for the cement the contractors use in Flanders. Before we had actually gotten through the wall, the pick and crowbar were very nearly useless, but after about six hours of slavery with the crowbar we finally succeeded.

Although I have visited Pompeii I have never done any excavating there, but I imagine the research parties have exactly the same impression

* Extracts from the story told by Captain Charles Dolphin, Architect, in Leslie's.

and feeling of awe when they break into a chamber that has not seen the light of day for hundreds of years that we had when we got our first glimpse of the inside of the room under the pile. In spite of our experience in gruesome trench-warfare, we had very much the feeling of tresspassing when we poked our heads through the big hole in the brick wall and tried to make out objects in the dim interior of the room discovered under the wreckage.

We had brought candles with us, and, lighting one of these, I stepped through the opening. We found the room exactly as it had been in peaceful times, except that two bodies were lying near the choked-up doorway leading to the outhouse, from which we had just made our way.

The man we found outside no doubt had tried to hold on to his home as long as possible, but evidently had lost his life defending all he held dear. During his defense a shell must have struck the building, bringing it down in ruin, killing him and blocking up the only exit from the room where we found the two bodies, both those of women. We buried all.

As most of the farmhouses in Flanders have brick floors, the houses naturally make very fine strongholds or forts, and although not entirely impervious to heavy shell fire, most of the time they withstand bombs and rifle bullets. The upper floor of the ruined house we were exploring was built of arched brick between steer or cast-iron beams and this was supporting the wreckage above.

Under cover of darkness we got back to our lines to report and the following day we returned with hammer, nails, saw and all the necessary implements for cutting through the ceiling above, and after constructing a ladder we attacked the ceiling. This became a very difficult feat as we had to be very careful not to displace some of the more important parts of the construction above and bring the whole ruin cracking down about our ears, for this would have invited a concentrated artillery fire from the German batteries. We had to handle picks and crowbars very quietly on the brick work, otherwise the enemy could hear the clinking of steel and would pepper us. After much back-breaking work we cut a hole through the ceiling and found that most of the wreckage above consisted of bricks and on top of them some straw that had evidently been in the attic.

There were plenty of remarks handed about as the boys lay on their backs chipping away at the ceiling. Private Houle, a French-Canadian, between grunts blurted out, "I think, Sergeant, dat one of dese fellers wat go about de countree for to sell goods would be a good man for dis job."

"Why?" I asked him.

"Well, you know," he replied, "when he's ride about da countree in dose wat you call heem—Pullman car? Well he's got lots of practice for lie on hee's back. When hee's want for tak' off hee's clos' he haf' to stan' on da back of hee's neck and on da back of hee's heel—and peel heemself jus' like a banan'! So I t'ink dat is good practice for his job."

After removing the bricks very carefully in a sort of a funnel up to the straw, I found that by pushing my head up very slowly through the straw itself, I could look diagonally across No Man's Land at the enemy trenches about two hundred yards away. I found that I could see in one corner of their forward trench and although the distance was too great for the naked eye to distinguish much, I could see three or four Boches carrying on some sort of work. I made out a report to headquarters, requisitioning a telescope, cement, steel beams and a few hundred sandbags, and requesting that a working party of twenty-five or thirty men be detailed to me for the night, as I intended to rush the building of a steel and concrete cupola inside the room to protrude up into the straw.

Of course we had to be careful to put the straw back again over the concrete and steel loophole as nearly as possible as it was before, otherwise the enemy would soon detect the change, as both sides were continually photographing each other's lines.

After our O. P. was completed I erected the telescope and took a look at the Boches, working in their trenches. The first impression was uncanny, because with the telescope it seemed almost as if I could touch them. Being only about two hundred yards away, the telescope brought them up close enough for me to read the regimental numbers on their shoulder straps.

As every important point in the trenches is connected by telephone, I had had one installed in the O. P. I lost no time in telephoning to headquarters that we had discovered a place where Fritz could be watched in all his antics. That O. P. served us five months, until one day a Boche shell shattered to cupola, vacant at the time. Two men were always on duty, day and night, and the range finders were our most valued aids.

One day the man on duty above called attention to the fact that our enemies were carrying through their front trench long black pipes about fifteen feet in length. Taking the man's place I made a thorough examination of the actions of the men, and for some time was very much puzzled as to what they were doing with such things in the front line. Suddenly two of the Boches drove a pipe down perpendicularly in the trench, and like a flash I realized what they were doing. They were digging a mine shaft and the pipes were to pump water from the lower level. I got my commanding officer on the telephone and explained what was happening. He at once sent the mining officer of our area to the O. P. I made a sketch of the trench showing the enemy handling the pipes. This was sent by runner to Brigade Headquarters.

After watching the enemy at his work we decided that there could be no question of what he was doing and we would have to immediately take counter measures. As most of that part of the front had already been mined by ourselves, although not blown up, a special listening apparatus was placed in our mine galleries directly opposite the supposed mine shaft in the enemy trench. Sure enough the enemy could be heard digging not far away. As their mining operations had not progressed very far, it was not necessary for us to blow a counter mine against them, and the best way to put a stop to their devilishness would be to blow them to pieces with artillery fire. So, after all necessary arrangements had quickly been made, I was detailed to do the observing for the artillery fire. Then I proceeded to make a sketch, as accurate as possible of the whole area, for use by the artillery in the coming "strafe." At the same time I evolved a system of sketches so that when I reported the striking of a shell upon the enemy trenches, I could quickly report exactly where the shell landed by quoting a letter and a number right off my sketch, and, of course, as these corresponded to the letters and numbers upon duplicate sketches at the guns, the gunners instantly knew where their shells landed.

* * *

Leave it to Murphy

An officer on board a submarine was drilling his men.

"I want every man to lie on his back, and put his legs in the air, and move them as if he were riding a bicycle," he explained. "Now commence."

After a short effort one of the men stopped.

"Why have you stopped, Murphy?" asked the officer.

"If ye plaze, sir," was the answer, "Oi'm coasting."

—Pittsburg Chronicle-Telegram

San Francisco Architect has Experience with Boring Beetle

MR. Albert Farr, San Francisco architect, recently had an experience with a wood-boring beetle, in a new house which he was building for a client, and while this is Mr. Farr's first experience with the parasite, he has volunteered the facts for the benefit of others in the building line that they may watch out for the little "animal" and thereby guard against possible spread of the destructive larva. Mr. Farr thinks lumber dealers should subject their material to closer inspection before delivery.

In the house where the beetle was found, Mr. Farr reports the discovery of fifteen or twenty small holes which penetrated not only the pine floor but the hardwood veneer and even went so far as to pierce a heavy oriental rug. A careful search revealed a fully developed beetle, about 1½ inches long by ¼ inch wide and dark brown in color. Realizing the great loss of standing timber already destroyed by borers, the possibility of the transference of the activity of these pests to worked material, especially in a region where lumber is used structurally to so great an extent, Mr. Farr sent the beetle to Professor E. C. Van Dyke of the University of California, for a report which is given herewith in full:

UNIVERSITY OF CALIFORNIA
COLLEGE OF AGRICULTURE,
AGRICULTURAL EXPERIMENT STATION,
BERKELEY.

E. C. Van Dyke, Taxonomy.

July 24, 1918.

Mr. Albert Farr,
Foxcroft Bldg.,
San Francisco.

Dear Sir: Your letter with enclosed beetle has been referred to me for answer.

In response, I will say that the beetle is Criocephalus productus L Ec., a wood-boring species which lives in fir, spruce and pine, and is widely distributed throughout the West. They live but one generation in the timber and will not reinfest cured lumber.

From the data given in your letter, I am convinced that the beetles developed in the Douglas fir flooring, the infestation of that timber having taken place in the forest or the mill yards due to the logs being allowed to lie through a summer, and that when they matured they not only worked their way out of the wood in which they lived but through the overlying oak and so forth. The curing of the timber no doubt retarded the development, so that the emergence of the adults was a year or so later than normal.

The possibilities are that all of the insects which were in the infested wood have matured and emerged, for one brood generally remains constant as to time of development, and that you will have no further trouble with them. If, however, the lumber was badly infested and had dried out more quickly in certain parts than in others a portion of the brood might carry over another season.

Your only protection against such insects is to see that the timber used is not infested. Normally it is not on this coast, for the timber is milled within a short time after the trees are felled or before the larvae can work themselves into the heart of the wood. Only when the logs are allowed to lie too long before being utilized is there any great danger, for the beetles rarely lay their eggs in dressed lumber. Kiln drying is of course a sure way of preventing such occurrences as you have had, for the heat would kill any young larvae that might be in the timber.

Yours sincerely,
E. C. Van Dyke.

Attention is here drawn to destruction of numerous magnificent conifers bordering the automobile driveway between San Francisco and San Jose, entirely due to the ravages of this parasite.

The following letter from Mr. C. H. White of White Bros., hardwood lumber dealers, gives some additional information about the beetle that is of interest:

Mr. F. W. Jones,
Editor The Architect and Engineer,
68 Post St., San Francisco.

Dear Mr. Jones: Replying to your letter of August 13th enclosing me a letter written from the College of Agriculture, Berkeley, regarding Criocephalus, a wood-boring beetle which attacks fir, spruce and pine, I am not at all familiar with the parasites which attack soft wood.

Hard woods are attacked frequently by the powder-post beetle, ash being the wood which seems especially to the taste of this "animal." The United States Navy in all its requests for bids on ash insert a proviso that any lot of Ash which shows effects of the attacks of the powder-post beetle will be rejected in toto. The Chief Inspection Officer at Mare Island, I believe, will be glad to give you full details of the ravages of this beetle. I believe the reason the Government takes the stand it does is that the Inspection Office is afraid that if the powder-post beetle gets a foothold in a lumber yard it is liable to attack the entire lot of lumber stored in that particular place.

We hardly think this eventuality is likely to occur, as we have had in times past in stock hard wood which showed evidence of the powder-post beetle, and the damage has gone no further than the particular lot of lumber in which the beetle or rather the larvae were living at that time. I understand that it is the larva and not the beetle which bores.

Regretting that I cannot give you any further information and with very kindest regards, I am,

Yours very truly,
C. H. White.

* * *

More About Concrete Freight Cars

IN a few weeks' time experiments will have determined the practicability of constructing railway freight cars of reinforced concrete, says Searle Hendee in the Popular Mechanics Magazine. Stimulated by war conditions, which make the immediate provision of more carriers and the conservation of steel imperative, a prominent Chicago engineer, in association with some of the largest car-building companies, has turned his attention to the fabrication of concrete gondolas. A car is to be built at once in accordance with the plans and specifications now in the final stage of completion. Contingent upon the showing made by this car, which is patented, is the immediate production of others on a wholesale scale. It remains to be seen what the new gondola will do. But it has been designed to accomplish the same work and withstand the same severe usage as modern steel cars. In addition to costing probably not more than half as much as one of steel, the concrete car is capable of being more quickly built. Furthermore, its adoption would release many skilled workmen for shipbuilding. The question of practicability seems to be dependent on weight. Standard steel gondolas weigh from 38,000 to 52,000 pounds. If it is found possible to construct a concrete car of fifty tons' capacity and consistantly keep the weight at about 50,000 pounds, engineers feel that success will be assured. In this connection it is interesting to know that for two years or more certain companies have been employing concrete in repairing freight cars and have found it satisfactory. For this purpose a fine cement mortar, sprayed by a cement gun, is used.

Editor's Note.—It is not generally known that the idea of a concrete freight car originated with a San Francisco engineer, Mr. A. C. Grenwank, draftsman in the office of the California State Harbor Commission. Mr. Grenwank has applied to the U. S. Patent office, Washington, for patent rights on his invention.

How Can Architectural Practice Gain Proper Recognition?

IN an address before the North Dakota Architects' Association, Mr. George Hancock, president of the society, referred to the tendency of engineers to usurp the architectural profession. He said in part:

Engineers, by their energy and success in gaining the public ear, are fast driving the modest, timid architects out of business. To offset this tendency we notice that many architects, in order to keep up with the procession, have added the title of engineer to that of architect for the purpose of impressing the public with their superior qualifications over and above that of the properly trained architects who make no claim to other professions. Architecture and engineering are two separate and distinct professions, and it is given to but few men to master the intricate details of both, so that in most cases the assumption of the dual title is used for the sole purpose of gaining advantage over those who do not have the temerity to adopt such with little or no preparation.

The Massachusetts Institute of Technology makes the distinction between architecture and engineering and has separate courses for the training of students in each, as either is all that the average intellect can properly master with credit to himself. So that the mere adoption of a title without the necessary training to properly sustain it should at least be discouraged by all self-respecting architects.

However, we must cease worrying over our troubles and assert ourselves with energy in order to gain what we desire; a better and more extended appreciation of our profession as architects.

Some professions, such as the law, are held in less esteem than that of architecture, and if we would increase respect for our profession we must command it through our work and that will bring us the public recognition we so urgently need.

It is useless for us to look to the law courts for protection, as the lawyer is the only winner where such efforts are made, but as a reason for hope in the improvement of our chosen calling, we have only to look at the host of poorly paid teachers and clergy to learn that our lot is no harder than theirs, in the matter of lack of appreciation of the service they render to the public. It is well to think of others when disposed to complain of our lot.

If we would succeed better than they we must do better and nobler work, with our minds set more on achievement than on temporary financial success.

It is futile to complain that this is a commercial age, with but little public appreciation of art; such whining does no good and only indicates weakness. There is just as much artistic taste and feeling in the world today as in the days of Titian and Michael Angelo, and it is for us to satisfy this artistic taste and feeling if we would succeed in gaining for our profession the respect and recognition to which we believe the nobility of architecture is entitled.

During the past ten centuries architecture has come through many changes and developments. The eighth and ninth centuries gave us the unique creations of the Saxons; the tenth and elevents centuries the solid honest Norman work that has so well stood the test of time, as evidenced at Winchester and Durham.

The twelfth and thirteenth centuries gave us the pure and graceful early French and English Gothic that so clearly expresses the aspirations of the people of those nations in the magnificent creations of Rheims and Amiens, Salisbury and Westminster, the like of which has never been seen before or since that age.

The fourteenth and fifteenth centuries gave us the geometrical and perpendicular styles, often referred to as the climax and full development of gothic architecture in Europe.

Such art and architecture as the people of those times produced should serve as a stimulant to greater efforts of the younger architects of our time. They had no examples to guide them and their work was the result of creative and imaginative concentration and skillful independent effort.

Shall we then, with all these beautiful examples before us and the numerous examples of the Renaissance of the sixteenth century, and the more recent productions of Jones and Wren and the revival of the Romanesque by Richardson and Hunt in this country, fail for the lack of making an effort to merit the recognition we so earnestly crave? No, we must attempt much even if we accomplish little, but as effort is the parent of results, we can expect no recognition by the public unless we command its attention.

By education and experience the architect of today should be better qualified to handle successfully building operations of all kinds than men not having such qualifications, but the public cannot appreciate this for the reason that the architects have not done their part in the instruction of the public to the point of appreciaion of their service to their clients and to the public in general.

So far, along this line, our efforts have been limited to talking to ourselves through the medium of professional and trade journals, that seldom or never reach the eye of the general public, or prospective client.

Undue modesty on the part of the trained architect is doubtless the cause of this shyness and should be overcome by a much needed change in the method of bringing the client and architect together, on a better and fuller understanding of their relationship to each other, and to protect the public from the trickery of the faker and charlatan who is ever ready to pluck the fruits of honest effort along all professional lines. The men who have fitted themselves by great expenditure of money and time to serve the public in an honest and skillful manner must have some protection as against quacks who have no training in architecture and who do their work by proxy and only see the commission or money side of the profession.

The licensing of all architects is a reasonable solution of the problem.

* * *

The Shell of the Long-Range Gun Which is Bombarding Paris

NOTHING definite has yet been discovered as to the nature of the German long-range gun nor of the shell it fires. M. Nicholas Flamel, in a further article in a recent number of the Le Genie Civil, puts forward some plausible hypotheses, based on the known facts, viz.: the fragments of burst shell; the white smoke which nearly always accompanies burst; the fact that the splinters show no traces of adhering explosive; and the use of the diaphragm with its special fittings, the exact function of which is still inexplicable.

After considering the various recognized explosives and rejecting them for one reason or another, M. Flamel suggests that the Germans may have used the following method, in which case the diaphragm would fulfill a different function from that which he previously attributed to it. In order that the shell should leave a white smoke on bursting, which is desirable for registering purposes, but no trace of explosive on the metal of the shell, he believes it possible the Germans may use an explosive of the panclastite or hellhoffite type, which would burst on impact without a fuse being necessary. The diaphragm and auxiliary parts, the function of which is still obscure, would be used to divide the shell chamber into two parts, which would be in communication with each other only on the gun being fired. The impact on discharge would open a communicating channel and allow the more dense liquid to flow into the rear chamber while the shell was traveling along the ascending part of the trajectory. Rotation of the shell would give the mixture time to be thoroughly incorporated by the time the shell had arrived at the end of its flight, since the time of flight is three minutes. An explosive of this kind would be safe on the gun being fired, since the explosive mixture is not formed until the shell has left the gun. It would also be certain to act when the object was struck, because it has been shown with certain panclastities of the carbon disulphide type that it is impossible to fire them from a gun, even at low muzzle velocities, without their detonating.—The Engineer.

* * *

Why?

Never could see why a married man should be exempted from military service. He is used to fighting and gas attacks; knows how to obey a command and to handle powder; understands infantry tactics; can dodge a twelve inch platter; can "Forage" for himself when "On his Own"; often "Goes over the Top" on a Saturday spree and can "Carry On" generally.

—"Benedict" in the Lake Periscope

Essential Building

SO much has been said and published of late about essential and non-essential building construction that this magazine recently addressed a letter to the War Industries Board, Region No. 19, C. A. Day, secretary, with offices in the Merchants Exchange building, San Francisco, for definite information. To certain questions propounded, Mr. Day replied as follows:

Gentlemen:—This is in reply to yours of August 30th. Answering your questions categorically:

(Question)—Will the construction of buildings or alterations to buildings be permitted without the sanction of this office, and, if so, to what extent?

(Answer)—The Priorities Division has placed a limit of $2500 on non-essential construction, and this applies only to alterations and additions to existing structures and does not extend to new work. The commission defines essential construction as that directly sanctioned by the Government or an indirect war necessity, such as caring for soldiers, seamen and war workers.

Judge Edwin B. Parker, chairman of the Priorities Division, broadly defined non-essential work as that which can be deferred until after the war. It is the desire of the government to conserve fuel, transportation and materials and to divert workers from non-essential to essential industry.

(Question)—Can a man who has $5,000 or $10,000 and is willing to pay the present high rates for labor and materials, build himself a home, without government permission?

(Answer)—He would find it very difficult, if not impossible, to purchase material, as most manufacturers are pledged not to sell materials for any but essential purposes.

(Question)—Are cities to be permitted to build schools provided same are needed to relieve congestion and provided the money is available?

(Answer)—This is a question which communities should decide for themselves, as it is an easy matter to determine whether construction can be deferred until after the war. In any event it would scarcely be possible to obtain the steel, iron and other metal products which enter into construction of this nature.

In regard to report that this department will permit repairs and extensions to existing structures, provided a contract does not exceed $2500, permit us to state that this department does not issue permits but merely gives its approval.

You say that by splitting contracts up into several parts, where involving in the aggregate many times the limit permitted, could be carried out. In reply to this we have only to say that such a subterfuge would not only be unpatriotic but would surely be detected and would probably result in an unpleasant situation for the parties concerned.

Replying to the question in your last paragraph. This office, as before stated, will not issue permits but will merely approve or advise against the various propositions which are submitted.

Trusting that this information will be of value to your readers.

Very truly yours,

C. A. Day, Secretary in 19th Region.

* * *

Bad News for Berlin

THE war news from the eastern front these days is bad news for the German people. Quotations from German newspapers portray the gloom that overhangs the people in the large cities. That the people in the small towns and country are equally depressed is not to be doubted.

The Liberty Loan Bond buyers of the preceding loans have their share in the success of the entente allies. They furnished the sinews of war not only to fight the U-boats and to build ships, not only to raise, equip and send our soldiers over, not only to supply them and our allies with food and munitions, but more than $6,000,000,000 of their money has been loaned to our allies so that they may prosecute the war with vigor and strength.

We here at home have an opportunity to send the Germans some more bad news. The Germans have great respect for money; they know its vital value in waging war. They know, too, that the support the American people give a Government loan measures largely the support they give their Government, the moral as well as the financial support they give their armies in the field.

A tremendous subscription to the Fourth Liberty Loan will be as distressing to the German people as a defeat for them on the battlefield, and it will mean as much. It spells their defeat; it breaks their morale; it means power to their enemies. A subscription to the loan is a contribution to German defeat and American victory.

The Corrosion of Iron and Steel, with Special Reference to Reinforced Concrete

By J. NEWTON FRIEND, D. Sc., Ph. D., F. I. C., Carnegie Gold Medallist

OWING to the unprecedented importance of iron in its relation to modern civilization the early history of the metal possesses peculiar fascination for the antiquary. It is safe to assert that the wonderful progress which has marked our path during the last 100 years would not have been possible had not the earth possessed an abundant supply of iron ore. In whichever direction we cast our eyes, articles of iron, large and small, essential and ornamental, meet our gaze. It is iron in some form or other that constitutes the backbone both of our railways and of our mercantile marine. With out these rapid means of transport the huge populations of London and our larger cities could not be fed and supplied with the necessaries of civilized life as we know it today. Again, reinforced concrete, in which we are all specially interested, owes what strength and adaptability it possesses almost entirely to its iron frame. I am sufficiently optimistic to believe that a brilliant future is already assured for this material.

In the sequel the term iron is used to denote the various kinds of iron and steel without differentiation.

There can be little doubt that man, in the days of the early childhood of the human race, would seize upon any stones, branches of trees, or other hard materials lying at hand for purposes of offense or defense. As years rolled by he would learn to prepare in moments of quiet for future emergencies and would thus single out stones, etc., which appeared to him specially suitable for the purpose, and keep them by him. Later on it would occur to him to improve upon the natural shapes by chipping and he would soon discover that flint is particularly amenable to such treatment. Thus would originate the flint weapons and tools which have been discovered in large quantities in modern times and which antiquaries have made use of to throw interesting light upon the manner in which primitive man lived during what has been aptly termed the "stone age."

In all probability during his search for suitable stones early man occasionally stumbled across meteoric iron. Finding that it did not crack on being hammered,* that it possessed great tenacity, and admitted of being rubbed to a fine, hard edge, he would greatly prize it and pieces would be handed down from father to son as valued heirlooms, far too precious and rare to be buried in the warrior's grave. This does not constitute the beginning of what antiquaries term the "iron age," for man, at the period of which we speak, had no idea of the connection between meteoric or native iron and the red or brown earthy hæmatites around him. He regarded the iron as a particularly useful and rare kind of stone, and probably there the matter ended in so far as he was concerned.

* * *

Rust is essentially hydrated ferric oxide, the extent of hydration varying considerably according to circumstances. In color rust ranges from brown to red, and it usually happens that the red is less hydrated than the brown. Some ferrous oxide is generally present, particularly if the metal has not been completely oxidized away. This oxide has a blackish appearance and may be found in the innermost layers close to the metal.* Rust also contains free water in addition to that chemically combined with it, for it is a hygroscopic, porous mass. It also readily absorbs carbon dioxide from the air. These two

*Zimmer, J. Iron Steel Inst., 1916, II., 306.
*See Analyses by Moody, Trans. Chem. Soc., 1906, 89, 726.

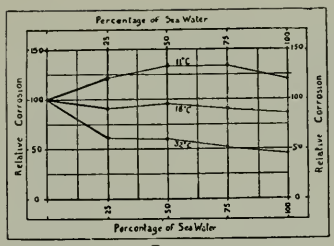


FIG. 1.

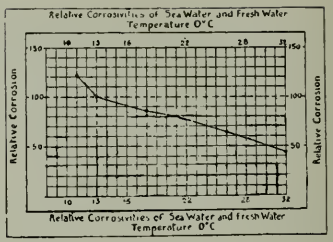

Relative Corrosivities of Sea Water and Fresh Water
Temperature 0°C
Relative Corrosion
Relative Corrosivities of Sea Water and Fresh Water
Temperature 0°C

FIG. 2.

properties serve to render it an active stimulator of corrosion. The carbon dioxide dissolves in the water to carbonic acid, which attacks a portion of the iron yielding ferrous carbonate. This, in turn, is oxidized by the air to rust.

According to Bauermann, when iron rusts it expands to some ten times its original volume. This may possibly be somewhat of an exaggeration, but the fact remains that very appreciable expansion does take place on rusting, a property that is made use of by the plumber in his rust joints. This expansion is, to the worker in ferro-concrete, a serious problem. If the metal once begins to rust a cracking of the concrete is inevitable; more air and water enter so that corrosion now proceeds apace, and the structure becomes proportionately weakened.

* * *

The influence of aqueous solutions of inorganic salts upon the corrosion of iron depends upon a variety of factors such as, for example, the chemical nature of the salt, its concentration and the temperature of the solution.

At ordinary temperatures a very dilute solution of sodium carbonate is considerably more corrosive than tap water. But if the concentration be increased to 0.25 per cent and above, the metal is entirely protected from rusting. Similarly, a 3 per cent solution of common salt at about 10° C. is much more corrosive than tap water at the same temperature, but as the temperature rises the relative corrosivity falls, so much so that at 21° C. the solution is appreciably less corrosive than tap water. Since sea water contains some 3 per cent of sodium chloride it is of interest to inquire into the effect upon its corrosive powers of diluting it with river water, for this occurs in nature at the mouths of many rivers and has to be reckoned with by the engineer.

This is well illustrated by Fig. 1.

The broken line represents the loss in weight, due to corrosion, of iron in tap water. This, for the sake of simplicity, is taken as 100 for each temperature studied. It will be observed that at 18° C. (64° F.) and above, all dilutions of sea water are less corrosive than tap water, whilst at lower temperatures they are more corrosive.

Figure 2, showing the relative corrosive action of sea water at various temperatures, is very interesting. At 11° C. sea water is considerably more corrosive than tap water. At 13° C. the two waters act similarly, whilst at all higher temperatures sea water is less corrosive than tap water.*

Before passing on to consider the means of preventing the corrosion of iron it may be well for us to pass briefly in review a few of the more important facts concerning the cause of rust formation.

*Friend and Brown, Trans. Chem. Soc., 1911, 99, 1202.

1. Water, alone, is without appreciable action upon iron at ordinary temperatures. This is well illustrated by the tubes exhibited here containing iron and air-free water. The tubes were hermetically sealed eleven and one-half years ago. Apart from the merest trace of tarnishing, which can only be detected under a powerful light, the metals appear to have undergone no change whatever.

2. Water vapor is without visible action upon iron at ordinary temperatures. Indeed, iron may be heated for prolonged periods in steam up to about 300° C. without undergoing any apparent change. At 350° C. and somewhat above, ferrous oxide is produced, the surface of the metal being tarnished and gaseous hydrogen evolved.* At still higher temperatures magnetic oxide of iron results and forms a skin on the surface of the metal, which tends to protect the under layers from attack. This, however, is not rusting in the ordinary acceptation of the term. It is oxidation, and is the principle of the Barff process of protecting iron from corrosion.

3. Dry air or oxygen has no visible action upon iron at ordinary temperatures, but when the temperature is raised to 220° C. iron acquires a pale yellow tint and at higher temperatures becomes straw colored, purple, and finally blue. These are known as tempering colors and are caused by thin superficial layers of oxide, as is proved by the fact that they are not produced even by prolonged heating in vacuo.* They are obtained even in perfectly dry air, such as that resulting from prolonged exposure to phosphorous pentoxide.† These layers tend to protect the underlying metal from attack and differ from rust in being anhydrous and tenacious. Rust, on the other hand, is usually hydrated, porous, hygroscopic, and friable.

4. A mixture of water vapor and air is without action on iron at ordinary temperatures, provided no liquid water is allowed to condense on the metallic surface. This was clearly demonstrated in 1905 by Dunstan and his co-workers,‡ who kept iron in tubes at constant temperature exposed for three months to moisture and air without any sign of rust forming.

On allowing the temperature to fluctuate, however, in order that liquid water might form upon the iron, corrosion readily took place. This disposes of the possibility that rusting is a simple case of direct oxidation such as occurs when the metal is heated in air.

From the foregoing it is clear that oxygen and liquid water are essential to corrosion.§

The preservation of iron in concrete may be effected in one or more of three ways, namely:

1. By complete exclusion of air.

2. By complete exclusion of water.

3. By rendering the concrete sufficiently alkaline to place it within the inhibiting area.

If the engineer can make his concrete conform perfectly to any one of these conditions he has achieved his object, for the reinforcing metal will not rust. Unfortunately, in practice, materials cannot be relied upon to yield perfect results and the engineer's best policy is to conform as nearly as is reasonably possible with all three conditions. In this way he may hope so to reduce the tendency to corrode as to render it negligibly small within finite time.

*Friend, J. West Scotland Iron Steel Inst., 1910, 17, 66. J. Iron Steel Inst., 1909, II., 172.
*Roberts, Trans. Inst. Mech. Eng., 1881, p. 710.
†Friend, J. Iron Steel Inst., 1909, II., 172.
‡Dunstan, Jowett and Goulding, Trans. Chem. Soc., 1905, 87, 1548.
§We are not here concerned with the academic question as to whether or not perfectly pure iron will corrode in perfectly pure water and oxygen. Perfectly pure materials do not appear in commerce.

The following considerations suggest themselves as worthy of careful study :—

1. None of the concrete materials should be too coarse, otherwise thorough mixing and good contact between the different ingredients will not be as perfect as is desirable.

2. It is essential to press or pun the mixture well into position in order to eliminate voids in so far as is possible. It is obvious that voids tend to increase permeability to water and air and are in consequence highly dangerous.

3. A sufficient thickness of concrete should be applied to the metal. If too thin the concrete may not be sufficiently impervious or it may crack mechanically and thus admit air and water to the metal.

4. Stray electric currents must be avoided. If the metal should become anodic, rusting would take place in consequence of the liberation of oxygen, and this, leading to cracking, would rapidly destroy the cement.*

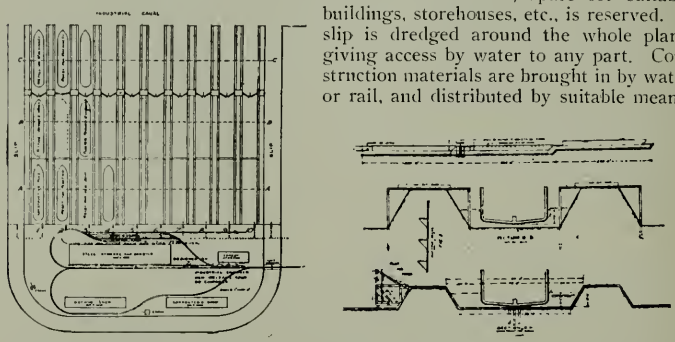
5. Substances likely to contain acids or acid producing bodies should be avoided. Coke breeze and slags are cases in point, as they frequently contain injurious sulphur compounds.

6. The concrete may be advantageously coated with some waterproofing material to render it still more impervious, provided such proofing is entirely free from acid or acid-producing substances.

* * *

Concrete Ship Production on a Large Scale

THE accompanying diagrams from Concrete embody the suggestion of Mr. Howard Egleston for the rapid construction of concrete ships. It is proposed that a series of dry docks, provided with gates as a means for admitting and ejecting water, be constructed adjacent to a suitable water front. At the landward end of the construction basin, space for suitable buildings, storehouses, etc., is reserved. A slip is dredged around the whole plant, giving access by water to any part. Construction materials are brought in by water or rail, and distributed by suitable means.



PLAN AND TYPICAL SECTION OF CONCRETE SHIP YARD LAYOUT

Ships are to be constructed in forms placed at the landward end of the dock. The hulls having been poured, the forms for the bow and stern are stripped and the forms moved laterally enough to permit the removal of the hull. The water is then admitted and the boat floated ahead its length, and in this section receives machinery and heavy equipment. It is again floated ahead and the final finishing completed. In the meantime forms are re-used and in this way a continuous stream of boats is turned out. The diagram, as shown, provides for ten construction basins, so that the entire plant would have a capacity of ten ships at each stage of the operation

*See Nicholas, J. Iron Steel Inst., 1909, I., 659.

Constructive Criticism

By OSCAR WENDEROTH
Former Supervising Architect of the U. S. Treasury Department

THE present world war is causing many of us to think more deeply about things than we ever have done and undoubtedly will effect more than one revolution in previously accepted methods and systems. I have no hesitation in stating that one of these changes will be to deprive the architect of much of the autocratic authority which he has heretofore possessed.

For a long time I have believed that the architect has had the wrong point of view in considering himself purely as a professional man and in arrogating to himself a position in society beside the recognized professions —such as medicine and the law—and in trying to place himself in much the same category with painters, musicians and sculptors.

The architect's work is not personal in the manner of the work of those with whom he seeks to class himself. When the painter has completed a canvas; when the writer has set down the last word of his manuscript; when the composer has placed the last hieroglyphic on his score, he is finished. It may be, as in the case of the composer, that his ideas must be expressed in another medium than that he used in recording them, but a musical composition is performed directly from the composer's score and the performances may be repeated in all their pristine freshness of inspiration long after the composer himself has "gone west." That, however, is merely a matter of method imposed by the very nature of the art of music.

When the work of an architect reaches the stage attained by a composer upon the completion of a musical score, he may be said only to have commenced. Up to that point, the architect's work has been largely intellectual. It has been concerned with the academic solution of the particular problem; with matters of design, with the preparation of highly technical drawings, highly technical specifications, etc. Up to this time, the architect may be said to work much in the manner of the attorney who seeks a legal solution of a given legal problem and then embodies his conclusions in a legal brief. At this stage the lawyer may be said to have completed his work, but not so the architect.

The architect's ideas are expressed conventionally by means of drawings and specifications but they may be translated into terms of building construction only by setting in motion numerous agencies that trade in the elements of building construction—not as matters of art—but purely as matters of business. And the architect must deal with these agencies on a business basis.

Because of this necessity of dealing with business agencies before his ideas may be expressed in physical forms, the position of the architect in the scheme of things differs fundamentally from that of the physician, the attorney, the writer, the dramatist, the poet, the sculptor, the musician.

On the other hand, the architect cannot be allied with the exponents of the various industrial arts. Lighting fixture manufacturers, furniture manu-

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Editor's Note.—Every architect should read Mr. Wenderoth's splendid answer to Mr. Comstock's comments on "Professional Ferment" which was published in the July Architect and Engineer by courtesy of Architecture and Building. Some of the profession—members of the old school—probably will not agree with all Mr. Wenderoth says, but he hits the nail squarely on the head when he declares that the successful architect today is the man who is not alone an architect but is a business getter as well, and, lacking the latter qualification, it behooves him to associate himself with some one who can get the business. Otherwise his talents as an artist and designer are likely to bring him face to face with starvation, or the next thing to it.

facturers, silver and gold smiths stand on the same plane with architects in matters of design. In fact, some of them produce works that in genuine inspiration, individuality and skill are more really akin to the work of the true artist than is the work of very many of the most eminent architects. But these artificers, cunning and skilful as they are, do not sell a "service"; they market a finished product.

The architect will find his "place in the sun" only when he understands thoroughly the nature of the service he should render to society. More than anything else, his position is that of a trust officer.

A client places in the hands of his architect a sum of money. The architect is asked to expend this sum for the client in the creation of a building in which the client may conduct his business more economically or efficiently, or in which he may live in greater comfort, or out of which he may derive an income, or by means of which the health or convenience of the public may be conserved.

It is true that a limited portion of the architect's work is concerned with purely decorative matters—such as the design of monuments, fountains, etc., but even these investments bring in a return.

Save when the architect has the luck to marry a rich wife and so may build a house for himself, he is solely occupied with directing the expenditure of the money of others. This is a serious and sacred responsibility; it is the function the exercise of which differentiates the architect absolutely from the lawyer, the physician and the members of the other so-called "professions" and is the thing that allies him with the trust officer in so far as his relation to society is concerned.

No man in his sober senses would place any part of his own estate, or the estate of another, in the hands of a trust company the officers of which were notorious for iridescent financial dreams but criminally lacking in judgment regarding the value of investments.

No man in his sober senses should place any of his money in the hands of an architect, for investment in building construction, if the architect is able only to produce clever and enticing things on paper and lacks the business organization for translating them efficiently into terms of building.

The architect who does not surround himself with a business organization, who does not know business methods, who is unfamiliar with building costs, who is not skilled in buying, as the agent of his client, and who does not obtain for his client the best quality of building construction at the proper price is not discharging his whole duty to his client. He is a menace to society and he should be restrained from practising independently.

The autocratic attitude of the architect is undoubtedly due to the fact that for years he has been trained to believe that when he has conceived an academic solution of a problem, everything else is of minor importance. Obsessed with this idea of superiority, the architect assumes a contemptuous attitude towards all matters of business, towards contractors, towards engineers, and may even place but little value upon the technical adequacy of his own working drawings and his own specifications.

That this autocratic attitude brings its own punishment is commencing to become evident. Owners are going to "others who build better, more efficiently and more economically under the name of architectural or engineering contracting firms." This the architect has brought upon himself.

There is much fine architecture produced in this country, and a large proportion of it is done by individuals and firms with enviable reputations —in the "profession." We think of these individuals as acquiring their

reputations and their large practices solely through the architectural quality of their work. But if we analyze the situation, we find that such is not the case. The architects who stand highest are as keen "business getters" as is anyone else. They do not advertise directly—yet—and they may avoid unregulated competitions as much as possible, but they seek work by means of personal and social connections to an extent that would make a reputable physician blush with shame. But the architect has been forced to adopt these devious methods of obtaining work because he has thought it necessary to hide behind a thin camouflage of alleged "professionalism," which prevents him from seeking employment openly. When, however, the architect realizes that his service to his client must rest upon a firm foundation of business efficiency he will be able to approach the client from that angle and he will obtain work because of what he can do rather than because of the number of friends he has.

There are architectural organizations that have financial connections and that assist clients in financing building projects. This is an entirely legitimate service for which these organizations are as much entitled to demand fees as are the bond and mortgage houses. But it is looked down upon more or less. Why? Because these organizations use their financial connections as levers to obtain employment for themselves as—architects. They are "playing both ends against the middle"; they are looked upon with suspicion and they are considered as engaged in unethical and reprehensible practices merely because the "professional" standing which the architects of this country are trying vainly to attain for themselves is based upon entirely false premises through ignoring the fundamentally important function of the architect as a business man.

The offices in this country that have great architectural reputations do not exist solely because of the quality of their architectural work. They survive, first, because they are business getters—regardless of their devious methods of obtaining work—and, second, because in each such organization there is a "power behind the throne." The "power" is usually an engineer! He has an understanding of, and an appreciation of, matters architectural because he is educated and a—gentleman. This is the chap who prevents the "long-haired" contingent from sending the concern on the rocks. He is looked down upon somewhat because he is engaged in such sordid activities as directing the business end, managing the office at a profit, discussing business matters with clients, checking bids and estimates, directing the specification writing, passing upon engineering and structural matters, adjusting costs with contractors and doing quietly the things that to the client represent the really valuable part of the architect's service.

It is desirable, of course, that the client should appreciate the purely architectural worth of the architect's service, because the future of the "art" side of architecture in this country depends upon the intelligent encouragement of the architect by the client—as a patron—but, after all, the thing that touches the client closest is the manner in which the architect spends his, the client's money, and the value obtained for it.

The business of architecture today is doubtless more complicated than any other activity. The architect's office is a sort of department store, dealing in miscellaneous service instead of in miscellaneous merchandise.

The matter of architectural design is a profession in itself. A knowledge of the theory of design and the experience necessary to apply this knowl-

edge to the solution of actual problems is as much as any one man can master in the short span of a lifetime—and many of us do not proceed very far along this difficult road, at that. But the capable designer—the man whose work can be used—must have a working knowledge of the characteristics of materials. In addition, he is required to be familiar with color in design, with ornament, etc. He must know the industrial arts in order that he may select intelligently the lighting fixtures, the rugs, the furniture, the hangings, etc., that will best compose with his own work.

But these academic matters are not the sum total of the architect's service.

If he succeeds, his organization must be able to obtain business. Somebody must be a salesman, whether he resents being known as such or not. If there is no salesman in the organization, the service of the organization will not be marketed.

In the development of the working drawings and specifications the architect is assisted by men who, with the exception of a very few, are chosen because their mental bias does not incline them towards architectural design, per se. These are the "job captains" who must have executive ability and must know how all kinds of materials used in building construction are combined, in order that they may be intelligently indicated on the drawings, and these are the men who must know all about qualities of materials, sources of supply, etc., in order that they may include in the specifications the information that may not be placed on drawings.

Then there is the engineering contribution, none of which has anything whatever to do with considerations of architectural design. This work calls for a very high order of skill and intelligence, and let it be noted here that the "big" engineers display in their work the same qualities of imagination —the same creative instincts—that make for distinction in the work of the "big" architects.

Then there are all the dealings with contractors. I understand that there are some two hundred trades that, in one way or another, contribute to the various classes of building construction for which the architect prepares designs. To each one of these businesses a man will devote the study of a lifetime and then only become versed in one phase of it. But the architect must have some familiarity with all of these things.

But a wide knowledge of the distribution of building materials and building products does not in itself give a man the ability to deal successfully with building contractors and the manufacturers of building products. That is a matter of business and demands a knowledge of business relations. It is an executive rather than a technical function.

The direction of the construction of a building "in the field" is not an artistic matter, save for the passing upon carving, colors, textures, etc., and this is done by most busy architects in the office—many of them, in fact, never actually see the buildings that are erected at any considerable distance from their offices. Capable superintendence is a thing in itself. A man may be a good job captain, may write a fine specification or may direct the business details of a considerable operation and yet may not be able, for the life of him, to tell whether a certain batch of concrete is or is not being mixed properly.

The architect does considerable bookkeeping in connection with his clients' accounts, with payments to contractors, with extras, credits, etc., and if he is to keep things straight this work must be managed as carefully as it is in any business office.

In matters of correspondence, adjusting controversies, making final settlements, dealings with clients, etc., etc., the architect discharges a busi-

ness function that, in essence, is no whit different from the business function of the despised contractor—except that the latter probably does these things much more intelligently and effectively.

There is no one man living and there never will be a man born who, of himself, can do all these things. I do not believe that any architect ever tried to persuade himself that he could do all of them. The trouble is that he has been compelled to think of himself as a professional man doing a personal thing. The result is that he places an importance upon the particular element of his service in which he has skill and considers everything else as subordinate and immaterial.

If it is true that no living being could render with uniform skill all the kinds of service that, together, make up the contribution of the architect, it necessarily follows that the complete service may only be offered by a number of men working together, each one contributing an important and necessary, but different, element.

Such a group must be made up of a business getter, a master of architectural design, a structural engineer, a mechanical engineer (heating, ventilating, sanitation), an electrical engineer, a business administrator and a technical director. An organization thus constituted is a business organization; by no stretch of the imagination could it be considered as a professional organization. I speak now of an organization in which each one of the elements of the architect's service is given its proper relative weight and is directed by a man who, in his particular thing, is as skilled as is "the architect." That the architect may, and usually does, employ outside practitioners to supply to him the necessary engineering skill does not affect the main argument which is that a properly balanced architectural organization must be a business organization; it cannot be a personal and professional one.

The reason that the architect must surround himself with men of business and executive ability is that the great bulk of his service to his client and to the community is a business service; in fact, architectural design, per se, is really the smallest element in the architect's service, although most conspicuous.

That architectural design is the least weighty element in the architect's service is proved by the number of architects in this country who build up large businesses without using it at all. These men do everything else that the complete architectural organization should furnish and they succeed because of the value to their clients of the things that they actually do furnish.

The man who is a business getter, who has an efficient organization, who handles his practice as a "business proposition," who administers the work of construction adequately, who is a capable buyer for his client and who keeps measurably within his client's limit of cost will build up a large and well-paying "practice" with the least possible expenditure of thought on matters of academic design. And such a man earns all of the considerable sums he is paid because he "delivers" goods that have value.

On the other hand, a man may have great talent and may be highly trained in matters of pure design and may—starve in a garret because he has neither the necessary business qualities for success nor the sense to connect with the right people.

After all, it is success we all are aiming for. What good does it do a man to have great talent if he is given no opportunities for exercising it?

And in architecture, above everything else, the opportunities for doing big and interesting things depend almost entirely upon "getting the business."

The architect today who is trying to impress his client with the idea that he, the architect, is engaged in personal and professional work is constantly playing a heart-breaking game of bluff. Instead of telling the client frankly that he is but one—though perhaps the principal—member of an organization that is offering the client a very complete service, he must try to impress the client with the belief that he is the "whole thing." So he keeps his associates in the background, for to admit that their contribution was as essential as his, would destroy the air of professionalism and of personal service that a mistaken theory requires him to try and maintain. So he bluffs and bluffs, making wild guesses now and then, until finally he is found out.

One cannot conceive of a man engaged in true professional work having about him an organization such as is absolutely necessary to the architect if the latter is to discharge fully his obligation to his client and to the community. No professional man would undertake to do a number of things in most of which he had no skill. Such a professional man would be set down immediately as a charlatan because he would be operating a business under the guise of a profession.

Plenty of instances of similarity may be found between the organization of the architect's ideal office and the organization of business institutions, but none whatever can be discerned between the organization of such an office and a professional establishment. The reason, to reiterate, is that the architect's relation to society is that of a business man and not that of the professions.

Consider the ideal office. It is organized somewhat after the manner of a corporation engaged in, say, the manufacture of motor cars. There is the business getting department (the advertising department), which may be the function of some one member, or of more than one member, of the organization; there is the architectural designing department (which corresponds to the laboratory of the motive engineer); there is the engineering department (which corresponds to the machine shop); there is the superintending department (which corresponds to the assembling shop); there is the business manager's department (which corresponds to the sales department) and there is the executive department.

In the executive department the architect's organization resembles the scheme of organization of the professional man. But, then, every activity must have a head—a directing impulse—whether it is a doctor's office, an architect's office, a motor factory or a Governmental establishment. Even so, the architect's office may more closely resemble the motor factory than the doctor's office. The latter must at least be his own executive while in the architect's office the real "boss" may be the "power behind the throne" and not the titular head of the organization.

There is another point in which the architect's organization resembles a business organization and not that of a professional man. One, or two, or all, of the members of an architectural firm may die and the business be continued under their name and without loss in so-called "professional" standing. What would happen if, on the death of a physician, his office assistant—himself a graduate physician—should calmly "succeed" to the dead man's "business," continue to use the dead man's name and in the name of the dead man write prescriptions? That is inconceivable in a profession, because a profession is a personal thing; a professional practice cannot leave behind it a "good-will" that can be traded in. But this is possible and

legitimate in a business, and that it is known and used in the "profession" of architecture shows that notwithstanding their claim to being "professional men," architects do realize the purely business aspects of their relation to affairs.

Can anyone conceive of several physicians being known as "Dr. Smith & Co." save as compounders of nostrums? Can anyone imagine giving his legal business to, say, "Brown, Jones, Robinson, Tompkins & Co."? Did anyone ever hear of a symphony being composed by "Beethoven, Haydn & Company"? Yet such firm appellations are frequent in the co-called architectural "profession." In fact, the head of the firm of D. H. Burnham & Co. became president of the American Institute of Architects. Mr. Burnham, by the way, had the right idea. He gathered about him men skilled each in doing one of the many things required of an architect, while he, himself, did the one thing that he knew how to do best. Whether accurately or not, he was quoted as saying that he was a business man who had some knowledge of building.

The architect's ideal office, organized as I have described, would raise the architectural standard in this country immeasurably. In such an office, the department of architectural design would have its own recognized place and matters purely architectural would be given due weight. The chief of design would probably not be concerned with hustling for business, nor with specification writing, nor with matters of business administration—all things foreign to the designing "temperament." All these things would be looked after by men to whom that sort of work is congenial. Each man would become highly skilled in his particular subject and the result achieved for the client would be a fusing of the best skill and judgment of the several department heads. Better architecture would be possible for two reasons. First, the chief of design would be left free to develop matters of design to the extent of his ability, and second, his authority as chief of design would be respected because one of the elements in the reputation of the organization would be the character of its output as architecture. All of that would be controlled solely according to the "policy" of the organization. At the inception of a project, there would be a "cabinet" meeting at which each department head would see to it that the thing for which he was to become personally responsible later was given its proper share of consideration. The result would be something that would represent to the client the best judgment of several trained men. In this way the client would be protected from having foisted on him things that would be horribly expensive to construct, things that were not adapted to his requirements, things that would inevitably cost more than his stated limit or things that merely expressed a fit of indigestion on the part of the designer.

Such an organization would quickly put out of business the other type of organization to which I have referred—the organization that is effective as a business unit but produces work inferior architecturally. The ideal organization would do as effectively everything that the other kind of organization is doing and in addition would produce good architecture because a reputation for excellence in design would be as much one of its assets as good business administration is the sole asset of the other type of organization.

But it may be objected that this scheme of organization would impose such a restraint upon the creative impulse of the designer as virtually to destroy all inspiration.

Any designer who is able to work only when his fancy is given free rein is an unsafe person and should be restrained—in an asylum. Much of the

discredit that has been brought upon the "profession" of architecture is due to the wild schemes of architects who will not consider the wishes of clients, who ignore limitations of cost and who think they are not giving play to their creative instincts unless they are doing something thoroughly irresponsible.

A business organization that is engaged in rendering a highly articulated service naturally forms itself into a corporation. In fact, this is required by law of certain types of business organizations—banks and trust companies, for instance.

The ideal organization for an architect should be a corporation. This form tends to stability. Each head of a department is a stockholder and the interests of the corporation are his interests also. Such an organization tends to inspire confidence in the mind of the client.

An architect may, of course, gather around him men who work with him congenially and who add to his contribution the things necessary to the complete service to which the client is entitled. The minor employees, of course, go and come, but when all the principals except the head hold positions that are subject to similar mutations there necessarily exists an element of weakness in the organization. An organization in which the directing personnel changes frequently can never become well knit and effective. It is only when the directing heads are part owners and have a say in the business policy and management—to the extent of their ability—and have, also, a say in the important matter of hiring and firing that they become wedded to the particular business and give it their best efforts.

These are the signs of the times. If the architects are to hold their own they must understand that before everything else they must be effective business men; that their organizations must be founded upon business principles; that it does not suffice to produce fine "paper architecture" and to ignore or subordinate all the other elements in the service to which the client is justly entitled; that they must cease to worship the fetish of "professionalism," and they must cease to pose as self-contained individuals rendering an exclusive personal service.

The published statement that the clients are commencing to go to the "others who build better, more efficiently and more economically under the name of architectural and engineering contracting firms," may be true. That these "others" have found a profitable field is because they are capable and shrewd business men. And because they are capable and shrewd, they will fortify themselves against the criticisms and jealousy of the "legitimate" architects by doing as good architectural work as the latter. For the "others" may employ skilled designers merely by making the working surroundings attractive and they will be smart enough to do that little thing. And at that they will merely be doing what many architects are doing anyway—except that they will not allow the tail to wag the dog. They realize that it would hurt their business reputations to be classed as—architects.

The only way the architects can meet this new situation and save themselves is to change their point of view, reorganize as business institutions and by building better, more economically and more efficiently try to meet the growing competition of the "architectural and engineering contracting firms" that already are taking work away from them.

Steel Ship Fabricated Like Tall Buildings

By FREDERICK M. KERBY

RECENTLY I talked with the father of the most important set of triplets the world has ever known. They were born on the morning of July 4. Their names are Alamosa, Alcona and Chetopa.

They are girls, and they have one older sister, who is only thirty-five days older than they. The older sister is named Agawana, and she was born May 30. By the end of 1918 there will be 150 children in this family alone, and there will be hundreds of cousins.

The Alamosa, Alcona and Chetopa are steel fabricated ships, and with their older sister are the only four ships of their kind in the world. They are the most significant of the hulls that took the water when the "big splash" came July 4.

Mr. Henry R. Sutphen is the man whose remarkable brain gave birth to the idea of building ships like skyscrapers or bridges. A year ago last April he presented the idea to General Goethals of the Shipping Board, but it was not until September 14, 1917, that the first contract for these ships was awarded to the company of which he is vice-president, the Submarine Boat Corporation.

"It was not easy to convince the Shipping Board that fabricated steel ships were a possibility," said Mr. Sutphen. We sat in a room the windows of which give a view of the complete sweep of twenty-eight shipways, with their towering shapes in every stage of near-completion, with the busy fingers of enormous cranes incessantly moving back and forth picking and gingerly placing the masses of steel that go to make up the ships, while through the open windows with the breeze from Newark Bay comes the incessant "bu-r-r-rap!" of hundreds of riveters.

"The idea was new to shipbuilders," Mr. Sutphen continued. "They could not believe that it was possible to standardize and fabricate ships as we would a bridge. But the thing simply had to be done. The rolling mills producing plate for ordinary shipbuilding operations were scarcely able to supply the steel necessary to meet the building needs for warships. But it seemed to us that if it were possible to organize the steel mills producing structural shapes so that fabrication and assembling could be done at the shipyard, then quantity production of ships would be possible.

"That is what we are doing. This that you see is not a shipyard; it is a factory; we are assembling material and putting it into place. Ninety-five per cent of the work is done in the fifty-six steel plants located all through the Middle Western States that produce the steel. We furnish the drawings and specifications to those plants; they turn out parts to order, properly numbered and lettered. We fit them together."

As I climbed over the endless piles of steel and up onto the scaffolding around Nos. 3, 4 and 6, which soon will be the completed Alamosa, Alcona and Chetopa, I realized what Mr. Sutphen meant. Behind the row of twenty-eight ways, each holding a ship, are the yards piled high with the various shapes of steel. A spur track from the railroad runs down between each shipway. A busy little donkey engine drawing a crane puffs up and down each spur, bringing forward as needed each piece of steel to fit in its place, while the swarming army of riveters on the sides of each ship keep busy with their eternal rivets.

I actually saw these ships grow up as I watched. I saw piece after piece put in place and the sides rise almost by magic.

"The work of building this yard had to be done from the ground up," said Mr. Sutphen. "Last fall this was a marsh. You see what it is today—buildings, shops, railroad tracks, cranes, everything—is 90 per cent com-

pleted; in another month the last lick will be struck, and then we will devote ourselves wholly to the job of getting our 150 ships. Working at capacity, we expect to be able to launch a ship every three working days."

*
* *

Small Concrete Garages

INSTEAD of being built of permanent fireproof materials, most garages in the past have been constructed of impermanent and thoroughly combustible ones—built to increase fire risk rather than reduce it, says a booklet on small concrete garages, published by the Portland Cement Association. Some day insurance companies and fire protection associations may be able to influence legislation that will solve the garage problem from the standpoint of compelling that all structures where automobiles are housed shall be built of fireproof materials.

Concrete may be applied in garage construction in several ways—monolithic, concrete block, stucco on metal lath supported by metal frame, to say nothing of concrete tile and concrete brick. Yet the full advantages of concrete from the standpoint of fire-safe construction are not realized unless the material is used to build the entire structure. When built two stories high so that living quarters are provided for a chauffeur and his family, fire-safe garage construction implies that the floor of the second story should be of concrete.

There is a peculiar combination of merit and adaptability in concrete. Structures built of it are not only fireproof but have been built in many places for the same price as less durable construction would have cost. Where there have been occasional exceptions to this, the slight additional first cost has soon been offset by the saving in maintenance and insurance.

Everywhere increasing preference is being shown for concrete construction, not only in cities but in the rural districts. The farmer builds concrete dairy barns, concrete silos, concrete feeding floors, concrete tanks and troughs —in fact, the farm uses of concrete are almost innumerable. Thousands of miles of permanent concrete pavement now provide 365-day-a-year roads through communities that formerly were all but inaccessible at certain seasons of the year owing to the bad condition of the highways. The fact that permanent concrete highways are increasing in mileage in strict accordance with their increase in popularity, suggests that the automobile should leave the permanent concrete highway only to enter the permanent, fireproof, concrete garage.

If careful thought is given to planning a garage, a number of desirable features may be incorporated in the structure that will not materially increase expense, yet will add considerably to the convenience of the structure. One of these consists of a repair pit of suitable dimensions, over which a car can be run when necessary to go underneath to clean it or make light repairs.

At one end there should be a small work bench with vise and other necessary tools all placed in front of a window where good light will add to the ease of making repairs. For the same reason, windows should be low enough so that interior lighting will be low down on the car rather than up toward the ceiling. All-fireproof construction implies windows with wire glass in metal frames, and iron shutters outside, especially where the garage is located near other buildings. This secures effective protection from within and without in case of fire, and in view of the value of the average car it is just as advisable to protect it from without as to protect other structures from the menace of the car. Fireproof doors also should be used.

Under no circumstances should a heating plant be placed in the structure. If near the house and there is a steam or hot water heating system in the

residence, pipes may be extended to the garage. Otherwise a separate heating plant must be maintained outside of the garage. In the country it may not be desirable to heat the structure. In the town or city, the residence and garage are usually located on the same lot, not far from each other, and therefore connection can readily be made to the house heating system if desirable.

A gasoline storage tank of steel, encased in six inches of concrete, and equipped with a gasoline pump, should be placed outside of the garage underground, and, say, 10 feet distant from the structure. The top of this tank may be two feet below ground level.

If the car is to be washed out of doors, then a small concrete-paved area at the front of the structure will serve as a convenient washing platform and prevent a mudhole. Locker rooms for storing blankets and miscellaneous car accessories will suggest themselves as desirable conveniences to be provided. These, of course, should not be considered as a part of the cost of the building, but rather as the cost of gratifying individual tastes and desires.

* * *

Remodeling—A Conservation Move

THE remodeling and modernizing of old buildings, which is being carried on so extensively today, constitutes one of the greatest conservation movements in the history of the country.

What to do with the older type of building was a question which a few years ago seemed impossible to answer. The constant opening of new buildings with every modern convenience for the comfort of tenants proved a magnet which drew from the older building its most desirable tenants. Substantial structures, honestly built, were in instance upon instance ruthlessly destroyed to make way for modern buildings because there seemed no other way out.

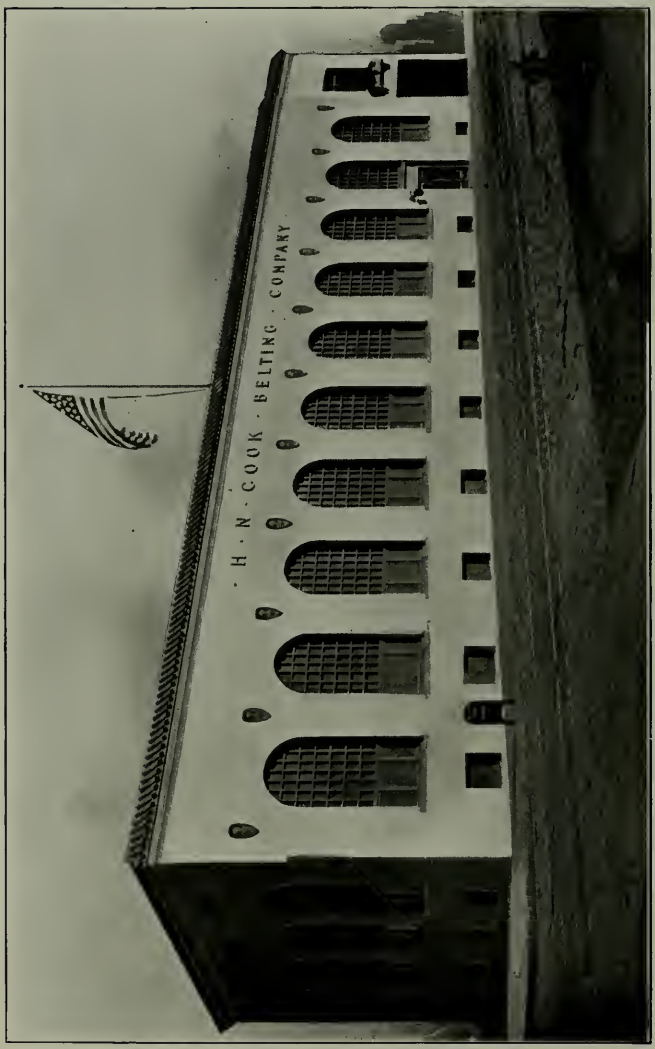
The war solved the problem. With the cessation of original construction due to scarcity of labor and other conditions with which we are all familiar, the over-built condition so prevalent in most cities gradually disappeared.

Banks, for instance, with the taking on of Liberty Loan work, required more and more space; the Government, with its mushroom growth of every department connected with the war, simply ate up space; industrial firms and commercial houses expanded until the overflow seeped into the older type of office building.

The older building came into its own. Space was leased at higher rentals. With the increased revenue and the healthy demand for space, the progressive manager of the building at once began extensive remodeling operations. Service must be rendered economically, waste space utilized. Old lighting fixtures must make way for newer and more modern systems—store fronts must be changed—heating systems revised to produce better results with lower fuel consumption—walls must be torn out, space relaid, new partitions erected—old window shades replaced—toilet rooms in which so much space is needlessly wasted rearranged, new partitions put in—in fact, worn, antiquated fixtures, ample in their day but inefficient now, must be shelved.

You have only to look out of your office window and count the number of older type of buildings to every modern one to appreciate the vastness of the work. When it became apparent that new building operations could not be carried on, it seemed for the moment to leave an awful crater in the construction field. But the law of equalization soon asserted itself and a new outlet for business was established.

And this great work of conservation, which has only just started, will continue during the period of the war and undoubtedly for some time thereafter.—Building Review.



BUILDING FOR THE H. N. COOK BELTING COMPANY.
SAN FRANCISCO. WARD & BLOHME, ARCHITECTS

The Architect in Industrial Building*

By ALBERT KAHN, Architect

I FEEL it a very distinct honor to have been asked by the president of the Institute to contribute a word to the deliberations of the convention on a subject on which I have certain convictions, and about which there exists at the moment considerable speculation.

Our particular office is largely engaged in industrial work for a class of clients which, too often, employs the engineer or contracting engineers, virtually contractors, who prepare their own plans. This fact, then, perhaps qualifies me to call attention to certain points of which the profession at large must take cognizance if industrial work is to be done more generally by architects.

The war, of course, has brought the matter to our particular attention. General building work has practically come to a standstill and must necessarily remain so while the Government needs every bit of energy expended on war work. Only Government work and buildings for concerns doing war work are being constructed, and since so much of this has been, and is being entrusted to large contracting firms, the question very logically arises, why? And then the further question, what is to be done to alter the situation?

The war has acted like an electrical storm in clearing the atmosphere surrounding the practice of architecture, and in revealing the architect's position in the commonwealth. That it is not altogether what it should be is very evident and that remedies to correct the situation must be found is equally apparent.

Primarily the past generation has been a period of tremendous industrial activity. Science has been pressed into practical service and has become the hand-maid of our daily life. New forces and new machines now at our command were unheard of three decades ago. Structural steel, sanitary plumbing, modern heating and lighting, and reinforced concrete were unknown a generation ago. These developments must obviously exert their influence on building. But while the busy world was perfecting one invention upon another, architects, as a class, failed to heed the trend of the times. Only grudgingly would they allow the utilitarian to enter into the building program. Modern ideas were all right if they did not trespass upon artistic concepts. Modern requirements had the unhappy habit of interfering with preconceived ideas of beauty. But the new methods were economically sound and practically sane, so they advanced under their own impetus, and if conservative architects would not adapt themselves to new conditions then another class must rise who would.

The impression prevailing in the minds of owners regarding architects in connection with industrial work has grown to be analogous to Mark Twain's comment on Christian Science when paraphrased, "If physicians," he says, "only knew more about Christian Science and Christian Science more about medicine, the chances are the patient would get well with either, provided he had a good nurse." And the paraphrase, "If architects only knew more about engineering, and engineers more about architecture, the chances are the owner would have a good building with either, provided he had a first-class contractor," is the general conviction among owners of industrial buildings.

Just as I started to write this paper the March number of the Architectural Forum came to hand. You have read the several answers to the question put by the editor, "In what manner and by what means can the practice of architecture be developed in order to win larger recognition?" To me,

*Address delivered at the Fifty-first Convention of the American Institute of Architects.

SPERRY FLOUR COMPANY'S NEW PLANT, VALLEJO
Maurice C. Couchot, C. E.

MILL BUILDING FOR THE CALIFORNIA COTTON MILLS, EAST OAKLAND
A. C. Griewank, C. E.

practically all the answers seem far of the mark. The very remedies proposed by the majority are at the bottom of the misgivings concerning architects. I take it that in putting the question the editor meant to ask, "Why are architects not more generally called upon to render service in this vast amount of industrial work under way?" For the question of proper recognition would scarcely enter were the work of a monumental character. Neither the Government nor the public would undertake such without the assistance of the architect. The most important work is quite generally now entrusted to the best men, and a very high quality of results obtains, for discrimination and appreciation have grown largely among the people. Architects have, therefore, very little to complain of in this field. They have proven their worth and have made themselves indispensable. And this is exactly what many have not done in the province of industrial work. When a company decides to build a bank or a board a library or an individual a fine residence, they call in the best architect they can find, but when a corporation or the Government decides to build a large industrial plant, they, too often, call in not the architect, but the engineer or the contractor.

Now, gentlemen, one or several corporations doing this might mean nothing. When, however, the practice grows to be general, make up your minds that the fault lies not with the corporation but with the architects.

To me the reason for the existing condition is simple. There is nothing mysterious or strange about it. Educational work among owners and propaganda are the remedies proposed by those answering in the Forum. It is not the owners who must be educated, it is the architects themselves. And as for advertising, such never bore results unless the goods were delivered.

Put yourselves in the place of a man about to build a factory. Would you call upon the artistic superman, the ardent idealist who soars in the skies, discourses on beauty of design and everything else but practical requirements, or would you seek the man who would suggest a practical, common-sense layout to meet your requirements, the man who would look at the problem from your own standpoint, who would place himself, as it were, in your shoes, and strive to solve the problem with and for you? The answer is obvious. You would place your work with the man of sound understanding and sane judgment, rather than with the artist, even if real and not imaginary, as is so often the case. You would seek an organization composed of men competent and qualified to handle the project in its various phases of plan, design and engineering, both structural and mechanical. Now such organizations are not built in a day, but require time to bring together and perfect in team work.

That anyone can do a good manufacturing building, and that it requires no particular skill, has been the general impression of the profession. The owners, however, know it to be quite different and no amount of propaganda will convince them otherwise. No more can the general house physician at one moment turn to surgery and achieve distinguished results than can the architect to industrial work until he has devoted himself energetically to such work in all its complexities, and has therein gained experience.

Here is the situation in a nut shell. Industrial buildings must need deal largely with practical requirements, structural design and mechanical equipment. To be sure, every owner prefers to have his building of good appearance, but this is only incidental. The plant must be economically designed. First and last, it must serve as an investment, not as a monument to the designer. And there is the rub. The very title "architect," which implies the building of the beautiful, fills the owner with fear that more attention will be paid the exterior to decorative details, than to the many practical features so vastly more important in the problem. The engineer, little con-

BUILDING FOR BUCKINGHAM & HECHT
BAKEWELL & BROWN, ARCHITECTS

cerned with appearance, more interested in the construction and in the success of the mechanical installation, is therefore called in, and though his buildings are generally monotonous and uninteresting, manages to satisfy his client. But even he is often dispensed with and the contracting engineer is entrusted with the work of design, as well as the construction. Whatever the general opinion of the architectural profession regarding the contracting engineer, certain advantages which commend themselves to the owner must be obvious. The manufacturer naturally welcomes every idea which tends to assist him in simplifying his problems. If he can call in a construction company, which has on its staff competent architectural men, good engineers, capable building superintendents, and if the company has proven itself able to produce successful results economically, he naturally prefers to deal with one person rather than a number. Efficiency is the watchword of the day. Directness of results, good business methods and speed in construction are the desired ends. Contracting firms have been more awake to the exigencies of the times than have most architects, wherefore their success. They have appreciated the value of concerted effort, of full co-operation and of proper co-ordination, wherefore they have won the favor of the owner at the expense of the architect. We know very well that in such an arrangement the owner is at the mercy of the contractor, that he is unprotected, that he doesn't know whether he is receiving full value for the money expended, but the owner is quite willing to take his chances on this. To decry the system, then, is useless. The whole problem must finally be a matter of "survival of the fittest."

There is just one way for the architectural profession to meet the situation, and that is by serving the owner better and more efficiently than do contractors. By planning better buildings, by working more assiduously, more interestedly, by designing more economically and by obtaining results more direct and more efficient than the contractor. If we can show buildings better arranged, better constructed, at less cost, and incidentally more attractive, if we can handle an operation in a business-like manner, expeditiously and without friction, shall we need to worry about lack of appreciation or recognition? Absolutely not. In just the measure that we are equipped and capable to handle the work we seek, in just that measure will it be entrusted to us.

Service, satisfaction at all costs, sustained interest in the work at hand, strict attention to the detailed requirements of the client, a quick grasp of his needs, a prompt acceptance of his viewpoint, and a sincere desire to co-operate and to solve his problem for and with him: these are what he expects. And yet, how often is the owner served otherwise, and his viewpoint entirely ignored. This is not on industrial work alone.

It is only a short time since I visited—with several professors, the biological buildings of various universities. This in connection with a building of the kind we were to do. The one prime essential for such structures is light and a minimum of obstruction, for microscopic work. Practically every building we saw was either Collegiate Gothic or an adaptation of an Italian palace, with glass but sparingly used, and when the question was put to the professor in charge of the departments, "Why so little light?" his answer was invariably, "Well, our architect felt that more would ruin the appearance of the building." Now is this right? Is this living up to our duties as architects, or to the best traditions of the art? In our particular building we frankly accepted the situation. We built them what we felt they needed—a modern industrial building with a maximum of glass surface and a minimum of masonry. The building is being used today with the greatest satisfaction to the faculty. Now, if the best work in the study of the sciences is accom-

BUILDING FOR GALLOWAY LITHOGRAPH COMPANY,
SAN FRANCISCO. ALFRED KUHN, ARCHITECT

plished in a modern work shop, why force a museum upon the scientists? And yet this is done only too often in practically every field of building.

This brings me to a point which so often makes for distrust of the architect—the eternal disposition of many to occupy a pedestal of exalted importance and superiority. It is their intent to make up by an air of profound wisdom what they lack of actual knowledge. Educate the client is their cry, and while they are attempting to educate him in something he knows more about than they, some saner man rightfully walks away with the work. This attitude is particularly offensive to the builder of an industrial plant, who, as a rule, has definite ideas of what he wants.

I have yet to find a single client unwilling to be advised, but in the proper manner, if you show him both that which he has in mind and at the same time a better scheme, ten chances to one he will accept yours. But neglect to show him on paper his own ideas and submit merely yours, and you are doomed to failure. Psychology here plays an important part. No owner wants his pet ideas ignored, no matter how impossible. He feels himself entitled to their careful consideration and rightfully insists upon this. We must have the owner's confidence, and in no manner can this be won more fully at the outset than by proper attack of the problem.

Another point—how many architects keep abreast of the times? How long is it since reinforced concrete, for instance, has proven itself an invaluable building material? It was strange enough that its acceptance was at first so long delayed by architects in this country, but there are many even today who have their misgivings and prefer to advise the use of lumber instead. And what is the reason? This—that concrete must be carefully mixed if used. Are they not engaged for the very purpose of seeing to this? Just as well object to the use of steel, for the riveting must be properly done if it is to stand up. It is not so long since that a firm I know had positively to be forced by the owner into using reinforced concrete, and then only acquiesced in order not to lose the commission. Now, is this thoughtful conservatism or is it deliberate neglect of the architect's duty toward his client, which duty requires that he keep advised of modern methods and improvements, and that he give his client the benefit of such knowledge? If the architects will not, can we blame the owners for employing others who will?

This is a technical age, an age of rapid advancement and achievement. Action is the watchword of the day. Utility must have recognition before beauty. And if architecture is to remain a living force, the expression of the spirit of the age, we, the architects, must express the demand of the times in our work.

If anything I have said has given the impression that beauty as such is to be ignored in building, I want to correct it. I believe as firmly as anyone in carefully studying the work for appearance, but beauty is a term not so easily defined. The beauty we recognize in the Greek temple fails to exist if the same temple with all its refinements be transferred to do duty as a brewery. Wherefore, then, suitability is an important element in establishing what is beautiful. For which same reason, then, the admirable wall surfaces of Italian palaces transferred to this country to serve as factory buildings would spell failure artistically as well as practically. Each new problem must, of necessity, develop standards of beauty entirely its own. Those applying to one do not necessarily apply to another. We know the value of light and air and sunshine, and also know that to supply such is a first essential for the success of the industrial building. A building which adequately fails to provide this fails in beauty, no matter how fine its details. Fulfillment of practical requirements and beauty, however, are not incompatible. Indeed, they are closely allied.

FACTORY, WAREHOUSE AND OFFICE BUILDING, SAN FRANCISCO, FOR WORKMAN PACKING COMPANY

Smith O'Brien, Architect

BUILDING FOR THE NATIONAL CARBON CO., SAN FRANCISCO

Maurice C. Couchot, Constructing Engineer

BUILDING FOR GOODYEAR RUBBER COMPANY, SAN FRANCISCO. A. M. MILWAIN, ARCHITECT

And now a few words as to organization for service, the all-important element in satisfying the client and equally important element in the architect's success. Old methods and systems have grown obsolete. The work of building has grown so complex in its many requirements that the one-man institution can no longer serve with satisfaction. With the many details involved today, no one individual can possibly know all of, or even a part of, our work. Therefore, it requires, besides planners, designers, structural engineers, heating and lighting and ventilating experts, competent outside superintendents, the necessary clerical force for business administration, and last but not least, the head to properly direct the entire group. All of these, however, form only one element of the properly organized office. A spirit of co-operation must exist as well as a full faith in the principles of an owner's rights and a complete devotion to his interests from the material dollars and cents point of view. Enthusiasm must prevail and there must be keen open-mindedness towards all things new and progressive, eagerness to keep abreast of the times, willingness to work hard, and, above all else, a liberal amount of good, hard, sound common sense.

To keep alive to all these things new is the one thing, the importance of which cannot be over-estimated. How much is lost to many through their unwillingness to be shown. Often the most valuable advice can be obtained from experts connected with manufacturers of building materials. In place of freely accepting, however, the assistance so widely offered by men who have devoted a lifetime to the study of just one particular subject, they prefer to rely upon their own limited experience, and in their egotism thrust upon the owner results which, though their own, are often not the best or the most economical. The efficiently organized office draws upon all resources about it, profits by all information that is to be obtained, makes certain that the best expert knowledge wherever this is to be found is secured, consults with whomever possible to bring about better results, and prides itself upon the final success achieved, rather than individual effort—on team work rather than star play.

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Why Not a Building Administrator?

Mr. Bryan's million men — and more — have sprung to arms, if not over night, in an almost incredibly short time. This country has truly made its business, war. Some industries have made war their business. They are the ones which have prospered. On the other hand, the average pre-war business organization has found the going difficult.

No one expects the affairs of this country, or of general business, to be normal in these times. Things either are abnormal or subnormal. There is great business prosperity or great business depression. It is reasonable that there should be curtailment in practically every line of industry. But how far can curtailment go before there is nothing left to curtail, or before there is not enough business to let us know that there is such a thing as business?

Shortly after this country entered the war, President Wilson cautioned the strictest economy. This caution was taken so literally, and forecast such serious consequences to all business, that a member of the Council of National Defense explained in an interview, given the widest circulation, that the President had not meant that in practicing economy we should kill business. It was declared that "waste is bad, but an indiscriminating economy is worse. Unemployment and closed factories, brought about through fitful and ill-advised campaigns for public and private economy, will prove a veritable foundation of quicksand for the serious work we have on hand. We need prosperity in war time even more than when we are at peace. Business depressions always are bad, but doubly so when we have a fight on our hands. We need more business, not less. There is real danger in hysteria. Indiscriminate economy would be ruinous. Now is the time to open the throttle."

Those statements are as true now and even more in point than when they were issued. Business must be allowed to live. It is necessary that

all businesses *essential* to the normal activities of the country continue on a sound basis. It is the regular, normal business industries that must really bear the burden of taxation, and contribute most largely to the support of the war, by buying Liberty Bonds, aiding the Red Cross, Y. M. C. A., Knights of Columbus, and other war activities. Taxes on profits made by war industries will provide enormous sums now, but neither the war nor war profits will last forever. So it is the normal business, the average individual, who pays the taxes and actually supports the Government.

But how long will normal business be able to pay a tax on its profits? Unless we are careful, there will be no business in certain lines, and with no business there will be no profits, and with no profits no tax returns.

Take the building business. In any sort of depression, such as financial stringency or panic, the first business to suffer is that of building. It is the last to recover. Just now the building business is suffering its worst slump. Private building is nil. It is not because there is no private building work to be done; not because private building work is unnecessary. It is because certain unofficial individuals began advising that building be stopped. They prevented banks from building when the banks were in particular need of additional facilities for carrying on their work. They were the cause of stopping nearly all construction work. They spread a report—and it was pretty generally believed—that the Government desired that no private building work be done.

Then, only a short while ago, Secretary McAdoo stated very emphatically that the Treasury Department had never even suggested that "building actually needed for the health and protection of the civil population or for the conduct of essential business of the country should not be constructed during the period of the war."

Secretary McAdoo's statement has by no means offset or counteracted the erroneous impression that has prevailed. Buildings are needed, but owners are really afraid to go ahead with their plans, so conscientious is the average individual about not interfering with the war programme.

The building business, except for war activities, is practically at a standstill. What is needed is a Building Administrator, who would do for building what Mr. Hoover has done for food. No builder, and no owner, would object to strict regulation.

A Building Administrator would solve the entire building problem. He, through his organization, could determine in short order whether a contemplated building was essential or not, whether materials could be spared for its erection, whether the labor situation was favorable. He would be governed by the facts in each individual case.

In a recent address at Atlantic City to the National Federation of Building Industries Senator Calder of New York said:

> To abandon constructive intent is to shut off the source of power and attempt to run on the momentum of previous constructive achievement, thus making of time an enemy rather than an ally. To shut off the wealth-producing industry of a nation is like shutting off the motive power of an airplane—instead of controlled and accelerated progress it means an involuntary landing within a limited radius.
>
> No industry in all the country is more wealth-producing than the building industry. It creates wealth; it makes additional taxable property from which taxes are more easily collected than from any other source. It increases land values, in fact it is the fundamental source of wealth, and if any line of endeavor should be encouraged it seems to me the one in which you are interested ought to receive the fullest consideration.

The building business will be the greatest and most essential business after the war—not only at home but abroad. The men who have spent a lifetime in creating organizations for carrying on building construction should certainly not be wiped out now. Matters should be regulated so that when the reconstruction period comes the building industry will be equipped to adequately handle the

big tasks which will confront it. Theodore Starrett once said:

Merely as a word—an idea—the term building is one of the greatest in our language. Builders are the successors of the soldiers of old. When this present business of soldiering is done and peace comes, it will be the builders who will inherit the indomitable soldier spirit, and upon them—the constructors—will be centered the interest the warrior has inspired.

Let's prepare for that time now. Keep the building industry on its feet. And one way to do this will be through the appointment of an intelligent "Building Administrator."

NOBLE FOSTER HOGGSON.

Wireless Plant

Mr. Carl Siebrand, architect, in the Northern Life building, Seattle, Wash., has prepared plans for the proposed wireless manufacturing plant of Kilbourne & Clark Manufacturing Company at the corner of East Marginal way and Spokane street, to cost about $80,000.

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514 Worcester Building

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. Arthur Brown, Jr., of the firm of Bakewell & Brown, architects, who recently returned to San Francisco from Harvard University, has been appointed professor of architectural design and theory of architecture by the Regents of the University of California, Berkeley. Dr. J. B. Stoughton-Holborn has been appointed a lecturer on architecture in the same institution.

Mr. A. J. Russell, architect, Tacoma, Washington, was the winner in a contest for the naming of a new revolving siphon ventilator for industrial buildings. "Alpina," was the name Mr. Russell submitted, and as a slogan he suggested, "The Peak of Efficiency." Unanimously the judges gave him the prize which was a check for $100.

Mr. Harlan D. Miller, Oakland civil engineer, has been notified by the California State Civil Service Commission that he has been given the highest rank of any engineer examined by that commission for the newly created position of construction engineer. Mr. Miller is the engineer who prepared plans for the proposed San Francisco-Oakland bridge.

Mr. John Galen Howard, architect and head of the department of architecture in the University of California, has been granted leave of absence for the period of the war. Mr. Howard is now in France, where he is engaged in war work for the Y. M. C. A. Mrs. Howard and son are at Carmel.

Colonel A. A. Fries, formerly District United States Engineer, stationed in Los Angeles, is now in France doing his bit as head of the Chemical Warfare Service. While in Los Angeles Colonel Fries was president of the Engineers and Architects Association of Southern California.

Mr. J. R. Nevins, engineer and architect, 1709 Hoge building, Seattle, has been commissioned by Mr. A. A. Albertson, architect in charge of the Puget Sound Navy Yard housing project, as structural and equipment engineer of the government building programme at Bremerton, Washington.

Mr. Clarence C. Criff, Sacramento architect, has been appointed secretary of the Home Products League of the Sacramento Chamber of Commerce.

Mr. August Wackerbarth, architect, has moved his office from 202 North Main street to 956 Court Circle, Los Angeles.

Mr. David Allison, of Allison & Allison, Los Angeles architects, is now in the Government war service.

Mr. John O. Lofquist of Shea & Lofquist, architects, in the Bankers' Investment building, San Francisco, has passed a successful examination for service in the constructing quartermaster's department, U. S. War Department.

Mr. John Bakewell of Bakewell & Brown, architects, of San Francisco, has been commissioned to Red Cross work in France.

Mr. Allan D. Fellows, well known East Auburn architect, is in San Francisco, undergoing treatment at the Lane Hospital.

Mr. William Raiguel, formerly with Mr. John Galen Howard, architect, is now in Washington, engaged in war work for his country.

Mr. Frederick H. Eley, architect, has closed his Santa Ana office for the present, is located for the present at 730 Daisy avenue, Long Beach.

Mr. Frank O. Eager, architect, has moved his office from the American National Bank building, Los Angeles, to 101 East Greystone avenue, Monrovia.

Mr. Milton Latham, architect, with offices at 111 Ellis street, San Francisco, has passed the examination for lieutenant in the engineer corps.

Mr. Hart Wood has moved his office from the French Bank building to 804 Merchants National Bank building, San Francisco.

Mr. H. T. Cory, consulting engineer, is in Washington in response to a call from the Government for war work.

Mr. Louis Stone, of Stone & Wright, Stockton architects, is in France engaged in war work for the Y. M. C. A.

Mr. Loring P. Rixford, architect, with offices formerly in the Sharon building, San Francisco, is in France.

Tacoma Society of Architects

The Tacoma Society of Architects has elected the following officers for the ensuing year: Roland E. Borhek, president; Earl Dugan, vice-president; A. J. Russell, secretary and treasurer.

Obituary

Sudden Death of Mr. C. W. Drysdale

Mr. Charles W. Drysdale, who for the past twelve years had been in charge of the office of Mr. George W. Kelham, architect in the Sharon building, San Francisco, died suddenly of heart failure September 4th. A short time before his death Mr. Drysdale was conversing with his chief and apparently was enjoying the best of health. He expired at his desk before medical assistance could be procured. Mr. Drysdale came to Mr. Kelham from Chicago in October, 1906, and had been intimately associated with him in carrying through all the large projects that have been handled by Mr. Kelham since taking up the practice of architecture in San Francisco. Mr. Kelham was especially pleased with Mr. Drysdale's work in connection with the building of the Carnegie Library in the San Francisco Civic Center. The minutest detail was not overlooked here. Mr. Drysdale personally designed and superintended the construction of the new Elks' home in San Rafael, himself being an active member of that order. Mr. Kelham pays a high tribute to the worth and character of the deceased. "He was a fine type of man and in every way a credit to the profession," said Mr. Kelham. Mr. Drysdale was 45 years old and is survived by a widow.

Noted Architect Dies Suddenly

Mr. George M. Bryson, well known Utah architect and formerly president of the Caledonia club, died suddenly in his bachelor apartments at the Commercial club, Salt Lake City, August 12.

Although having complained of failing health for several months, he continued his work actively and up until Saturday spent the major part of each day at his office in the Boston building.

Mr. Bryson was about 50 years old and a native of Scotland. He never married. He made his home at the Commercial Club since the erection of the new club building in 1909.

So far as is known, he had no relatives in this country. He was a member of a wealthy Scotch family, all of whom are said to reside in Scotland. He came west from his native land about twenty years ago, and first settled in Colorado, where he engaged in his profession as an architect.

Death of Naval Architect

Mr. George W. Dickie, well-known naval architect of the Pacific Coast and for many years a resident of San Francisco, died recently at his home in San Mateo at the age of 74. Mr. Dickie was for thirty-two years manager of the Union Iron Works and was best known at one time as the "builder of the 'Oregon.'" He designed and constructed the great revolving dome at the Lick Observatory, was largely responsible for the adoption of triple expansion engines in ship construction and, indeed, played an important part in all lines of advance in marine engineering on this Coast. He was devoting himself to Government service at the time of his death, being employed as chief inspector at the Moore & Scott shipbuilding yards, Oakland.

Death of Portland Architect

Mr. William P. Lewis, prominent Portland architect, died at his home in that city recently after an illness of several weeks. He had been a resident of Portland since 1880 and was identified with many of its important building enterprises. He superintended construction of the Lincoln High school and other public buildings, as well as the residences of Messrs. C. E. Ladd and W. W. Spaulding. His work in architecture began in 1896. He was born in Somersetshire, England, in 1852. He left his home at 17 years of age, coming to the United States. For a time he resided in the east and later he moved to California. A widow and two sons survive him.

Modesto Engineer Dies in Service

Captain Edgar H. Annear, former county surveyor of Stanislaus county, died in a hospital at Hoboken, N. J., on August 28, and the body was brought to Modesto for interment. Captain Annear was popular in Stanislaus county and flags were placed at half mast in Modesto immediately on receipt of the news of his death. Captain Annear recently enlisted in the United States Engineer Reserve Corps. He was on his way to France when stricken.

Pioneer Architect Dead

Mr. A. J. Barnett, a former practicing architect in the early days of San Francisco, recently passed away at his home, 138 Hermann street, San Francisco.

Terminal Docks and Warehouses

Preliminary plans for a duplicate of the Bush Terminal warehouses and docks in New York harbor have been made by Mr. Frederick H. Meyer for San Mateo harbor. Prominent San Francisco capitalists are promoting the enterprise, which if carried out will prove a wonderful boon to coast shipping and very materially relieve the steadily increasing freight congestion.

Description Baffled Again

"I don't suppose there are words to describe your new bungalow."

"Yes, there are words—but my wife won't let me use them."—Ex.

After the "Beast of Berlin"

Mr. August G. Headman, architect, in the Call-Post building, San Francisco, writes that he is personally engaged and will be for several months in supervising the construction of shipways, wharves and a dry dock at a Southern California shipyard. Mr. Headman writes that he is glad to be in this interesting work, in that it affords him an opportunity to do his bit toward putting one over on the Beast of Berlin. In his absence from San Francisco Mr. Headman's business affairs are being looked after by Mr. B. J. Joseph, who is sharing the offices jointly with Mr. Headman and Mr. A. Lacy Worswick.

$125,000 Sacramento Factory

Mr. E. C. Hemmings, architect, of Sacramento, has completed plans and contracts will be awarded shortly for the construction of a manufacturing plant at Nineteenth and C streets, Sacramento, for the Northern California Milk Producers' Association. The main building will be 64x100 feet, four stories, and of reinforced concrete with Hauser windows and Maurene waterproofing. There will be a one-story boiler house, 30x50, of hollow tile and cement, also a tile oil tank and a 30,000-gallon concrete water tank. The buildings will cost $125,000.

Many Architects Seek Government Service

A large number of San Francisco architects and draftsmen undertook to register for Government service at an examination held during the fore part of this month in the Santa Fe building. Only those who had previously applied at Washington and who held telegrams instructing them to report to the local board were given an audience. The others, after waiting in line for hours, were obliged to go away without getting any satisfaction.

Residence Alterations

Mr. John H. Thomas, architect, in the First National Bank building, Berkeley, has quite a little residence alteration work, including additions to the Piedmont home of Dr. Ergo A. Majors, that will cost $3,000; alterations to the residence of Mr. C. S. Cherry in Rockridge, and additions to the Josiah Stanford place in Piedmont.

Farm Buildings

Mr. Hart Wood, architect, in the French Bank building, has completed plans for a group of ranch buildings to be built on Union Island, between Tracy and Stockton. Construction will be frame with shingle roofs and rustic siding. It is estimated the improvements will cost $15,000.

Profiteers Retard Housing Plans

Favorable action has been taken by the House Buildings and Grounds Committee on a bill to give the Government authority to requisition buildings to house war workers. It seems that real estate profiteers in many communities are retarding the Government's housing programme by demanding exorbitant prices for property.

Captain Harry George, commandant of the Mare Island Navy Yard, reported to the Government that 160 families of civilian employees working on the island and living in Vallejo had filed complaints with him against their landlords. In some instances it was shown that there had been an increase of 150 per cent in rents.

Hospital Work for San Francisco

The United States Government will probably spend between $1,000,000 and $2,000,000 for hospital buildings in San Francisco and vicinity during the next twelve months. This city is one of sixteen military districts in various parts of the United States where hospitals will be established by Uncle Sam, to take care of convalescent soldiers who will soon be returning from France. The Government will also spend $250,000 building an additional unit to the marine hospital, and probably as much more for extensions to the Letterman hospital, Presidio, San Francisco.

Mountain Residence

Mr. Frederick Whitton, manager of construction, 369 Pine street, San Francisco, has prepared plans for a large Mission style mountain home to be erected near Wrights in the Santa Cruz mountains, for Mr. A. E. Schmidt, at an estimated cost of $35,000. There will be fourteen rooms built around a patio. Exterior will be white cement plaster, with terra cotta tile roof.

In Need of Draftsmen

Mr. Warren H. McBryde, assistant superintendent of the Hercules Powder Company, writes that draftsmen—architectural, structural and mechanical—are needed in order to complete extensive construction work at the Hercules Powder Works, Hercules, California. Satisfactory applicants will be paid as high as $150 a month for their services.

Palo Alto Residence

Mr. Warren Skillings, Garden City Bank building, San Jose, who is the architect of two houses under construction at Palo Alto, has just completed plans for a third house to be built in the same city, the newest one for Mr. Douglas Watson. It will cost $7,500.

Exhibit of Small Houses

At the request of the "More Homes Committee" of the Seattle Chamber of Commerce the Washington State Chapter, A. I. A., is preparing an extensive exhibit of photos and sketches of small houses, a large number of which have already been prepared and are now on view at the headquarters of the "More Homes Committee." Mr. Stephen has offered his services in connection with this work and is devoting all of his time to assisting the chamber. The chapter will prepare working drawings of these houses for use in connection with the building drive of the chamber.

Concrete and Tile Buildings

Mr. R. Kelly, 110 Story building, Los Angeles, has taken bids for the erection of twenty concrete and hollow tile dwellings at Clarkdale, Arizona, for the United Verde Copper Company. The houses will have concrete footings, hollow tile exterior walls, composition and tile roofing, pine interior finish, cement plaster exterior, plumbing, wiring. Bids will also soon be called for the erection of a Class A hospital building, forty-eight 3-room hollow tile dwellings, a clubhouse and a number of bunkhouses.

Store Building and Studio

Mr. I. Zanolini, formerly in the office of Willis Polk & Company, now a practicing architect at 604 Montgomery street, San Francisco, has prepared plans for a one-story addition to the building on Columbus avenue, near Broadway, San Francisco, owned by Mr. C. E. Vitalini. The additional floor will be fitted up as a photograph studio. The improvements will cost $15,000.

Oakland Hospital

A down-town hospital in East Oakland to cost $1,000,000, the first unit to be built at once at an outlay of $300,000, has been authorized by the Alameda County supervisors, and the plans are now being prepared by Mr. Henry H. Meyers, Kohl building, San Francisco, who is the official county architect.

Housing for Sacramento Cannery

Mr. Washington Miller, 417 Market street, San Francisco, has made some preliminary drawings for additional housing facilities for the employees of the Libby, McNeil & Libby cannery.

Oroville Detention Home

Mr. Chester Cole, architect of Chico, has prepared plans for a $20,000 one-story reinforced concrete and hollow tile detention home to be built at Oroville for the Butte County Supervisors.

Economizing on Steel

Mr. Clarence Tantau, Clunie building, San Francisco, has completed plans for a $40,000 concrete and tile store building to be erected on Mission street, between Fourth and Fifth streets, San Francisco, for Dr. George B. Somers. Concrete girders and beams will be used in place of steel and in other features of the building the architect has provided suitable substitutes to conserve materials essential for war work. The Larsen-Sampson Company are the successful contractors.

Hospital for Soldier Boys

The Supervisors of Alameda county have authorized the expenditure of $250,000 or more for a down-town hospital to take care of some of the wounded soldier boys sent home from the battlefield. The hospital will be located at East Twenty-seventh street and Fourteenth avenue and will be designed to accommodate from 200 to 300 patients, by Mr. Henry H. Meyers, the county's official architect.

Warehouse and Compressor Building

Plans have been completed by Mr. Leland S. Rosener, C. E., Insurance Exchange building, San Francisco, for further additions to the Moore Shipbuilding plant in Oakland. All work is being done by day labor. Permits have been granted by the Oakland building inspector for a one-story warehouse to cost $20,000, a compressor house to cost $5,000 and a store room to cost $1,800.

Alterations to Hotel

Mr. William Mooser, Nevada Bank building, San Francisco, has been commissioned to prepare plans for alterations to the Poodle Dog Hotel property on Mason street, near Eddy, San Francisco. About $10,000 will be expended on the work. The new owners are the Goewey Investment Company, 505 Market street, San Francisco.

Postoffice Building

Mr. R. Kelly, 1110 Story building, Los ing, Los Angeles, has prepared preliminary plans for a building to be erected at Fifth street and Central avenue to be occupied as a postoffice station. The cost is estimated at about $100,000. Officials of the postoffice department are conducting negotiations for leasing the proposed building.

Bridge and Pipe Line

Messrs. Couchot & Markwart, San Francisco engineers, have made drawings for a wood suspension bridge and pipe line at Floriston for the Crown Willamette Paper Company of San Francisco.

Architectural Firm Reorganized

The architectural firm of Woodroofe, Griffin & Hill, Tacoma, has been reorganized, Mr. A. Woodroofe retiring. The firm name is now Hill, Mock & Griffin. Mr. Ernest T. Mock is the new member. He was for twelve years associated with Messrs. Bullard & Hill of Tacoma. Mr. Mock was at one time draftsman in the office of Mr. Frederick H. Meyers, architect of San Francisco. Mr. Woodroofe, the retiring member, will devote his entire time to business affairs in Spokane. Mr. Griffin, the other member, is attending the officers' training school at Camp Lewis.

Much Building in Fresno

Recent disastrous fires in Fresno, entailing a loss of more than $1,000,000, have made that city one of the liveliest in the State from a building construction standpoint. The Kutner-Goldstein Company is to replace its burned building with a one-story Class A store and mercantile structure to cost $50,000. The Madary Planing Mill Company will spend $100,000 on a new reinforced concrete factory, while the Hollingbeck-Bush Company will construct a group of fireproof buildings, including besides a planing shop four sheds each 800 feet in length, a stock room 150 feet square and an office building 24x50.

Schools Given War Board Ban

According to Washington advices no new schoolhouses may be built during the war. The War Industries Board made this ruling when approval was asked of a plan to expend $9,000,000 for schools in New York.

This ruling, it was said, will apply also to the construction of any public buildings, including postoffices, not actually needed for war purposes.

Foundry and Pattern Shop

Mr. Charles Sumner, formerly Chas. S. Kaiser, architect, with offices in the Mechanics Institute building, San Francisco, has prepared plans for a foundry and pattern shop for Mr. C. F. Braun. The building will be 70 by 100 feet, part one and part two stories, and will cost $10,000. The location is Shipley and Ellis streets, San Francisco.

Hospital Addition

Messrs. R. A. Harold and J. E. Stanton are preparing plans for an additional wing to the White hospital at 29th and "J" streets, Sacramento, and which will provide accommodations for thirty-five more patients.

Berkeley Store Building

Mr. James W. Plachek, 2014 Shattuck avenue, Berkeley, has completed plans and bids have been taken for adding two stores to the building of Dr. Roscoe L. Logan on Center street, Berkeley.

Contract for School Addition

Mr. G. A. Applegarth, architect in the Claus Spreckels building, San Francisco, has awarded a contract to Mr. A. D. Collman, 110 Jessie street, for the general construction of a one and two-story Class "C" addition to the Monson School at Sutter and Mason streets, San Francisco. The heating and ventilating on the same building will be done by the Scott Company.

The same architect is preparing plans for a two-story reinforced concrete addition to a two-story mercantile building on Post street, between Grant avenue and Stockton street, San Francisco. This improvement is estimated to cost $25,000.

Architect Gets Verdict

Mr. C. Lewis Wilson, a practicing architect at Monrovia, Cal., has been awarded a judgment by the Butte, Montana courts for $1100 against Mr. D. T. J. Murray of that city, in a suit to recover the value of plans and specifications made for a projected new building at Butte. The owner alleged that defects in the plans made them worthless. The architect asserted the plans were right but that the site of the proposed building has caused unfavorable complications which made completion of the structure unfeasible. The suit was brought for $10,950.

Brick Factory

Work has been started on a two-story brick factory building for the manufacture of optical goods at the Mt. Wilson Solar Observatory grounds on Santa Barhara street, Los Angeles. The building will be 45x90 feet, with common brick walls, composition roof, plumbing, wiring and heating. The interior brick walls will be painted. The structure will cost about $25,000. Mr. Myron Hunt, Hibernian building, Los Angeles, is the architect.

Los Angeles Cannery

Mr. T. Ronneberg, C. E., with offices in the Crocker building, San Francisco, recently completed plans for a large two-story brick and mill construction cannery for Messrs. Nielson & Tittle, Los Angeles. The erection of the building has just been started by Mr. Marcus Marcussen, a San Francisco contractor. The structure will cover ground area 300x200 feet and will cost approximately $200,000.

School Alterations

The board of trustees of Ojai grammar school district has received bids for alterations to be made to the frame school building at Ojai, Ventura county, in accordance with plans and specifications by Mr. Homer W. Glidden, 704 Wright & Callender building, Los Angeles.

Architect Punished for Disloyalty

The heavy hand of military discipline has fallen upon Mr. Francis J. Catton, Hilo architect, for his defiance of draft orders. Catton has received a sentence of six months at hard labor in the guardhouse at Fort Shafter and will forfeit two-thirds of his monthly pay during the period of the sentence.

Catton was tried by court martial on charges preferred by Captain H. Gooding Field, draft officer. The sentence is approved by Colonel Riley, commander First Hawaiian Infantry, under whose direction the trial was held.

Three charges were preferred against Catton, as follows:

1. That he violated the 63d Article of War by behaving disrespectfully toward his superior officer, Captain Field, by saying that "he would punch his —— nose."

2. Violation of the 61st Article of War by failure to report for induction at the time ordained.

3. Violation of the 96th Article of War in that he failed to obey the orders of his superior officer.

Significance of the Catton case lies in the fact that, although not in uniform at the time of the offense, he was still under military discipline, already having received instructions to report for the draft.

Catton, after being ordered to report for enrollment, departed from Oahu and, returning on a Saturday, informed Captain Field that he had to go away on business. He was then instructed to report immediately, but did not heed the instructions, and on the following Monday was rounded up on the order of Captain Field. On the way to the police station he is said to have used the above language with reference to Captain Field. Following his arrest he was turned over to the custody of Major E. F. Witsell, at Fort Armstrong, and following his induction was placed on trial.—Honolulu Star-Bulletin.

Extensive Alterations Planned

It is stated that Mr. John H. Rosseter, director of the Emergency Fleet Corporation and president of the Sperry Flour Company, San Francisco, will spend $70,000 at the conclusion of the war in remodeling and adding to his new home, recently purchased from Livingston Jenks, at Green and Jones streets, San Francisco.

$40,000 Concrete Residence

Mr. C. W. Dickey is preparing revised drawings for a $40,000 reinforced concrete residence to be built in Honolulu for Mr. A. S. Wilcox. Mr. Dickey also has plans on the boards for a number of farm buildings to be built near Winters, Yolo county, for the Kahn-Furth orchard.

Berkeley Divinity School

Miss Julia Morgan, architect, in the Merchants' Exchange building, San Francisco, has been commissioned to prepare plans for a new building for the Berkeley Baptist Divinity School, Dr. Hill, president. Preliminary drawings calling for a five-story building of brick and terra cotta have been approved and it is hoped the Government will permit the construction of at least part of the scheme now. This will call for an outlay of about $75,000, which money is available. The building will be erected on Dwight way and will cover an area 150x150 feet. There will be classrooms, dormitory, office and library.

To Build Oakland Houses

The Wickham Havens Co., Inc., has started construction of twenty-five houses of five and six rooms each in Havenscourt, Oakland. These will be followed by others in groups of twenty-five until a total of 500 has been built. The houses will cost about $3,500 each and will have plaster or rustic exteriors, shingle and composition roof, hardwood floors, sleeping porches, etc.

Vallejo Apartment House

Messrs. Reed & Corlett, Oakland Bank of Savings building, Oakland, have completed plans and awarded a contract for a three-story and basement brick apartment house at Georgia and Sutter streets, Vallejo, for Mr. A. W. Stremmel. The building will contain twenty-five apartments of two rooms and bath each, and will cost approximately $40,000.

Red Cross Building for Oakland

The Oakland Red Cross Chapter has raised $10,000 to be used in the construction of an office building and it is hoped to obtain permission from the city authorities to erect a building on the City Hall Plaza.

Working for Uncle Sam

Mr. Norwood W. Howard, manufacturers' agent, and for several years Los Angeles distributor for Ceresit waterproofing, has severed his connection with the building industry for the period of the war and has entered government service as computor draftsman in the twelfth naval district. Mr. Howard has reported at San Diego.

Mr. J. C. Hurley, consulting engineer and member of the firm of J. C. Hurley Co., heating and ventilating contractors, is now in the service of Uncle Sam, and in his absence from San Francisco the business of the firm is being attended to by his partner, Mr. J. A. Nelson. Mr. Hurley is at Vallejo, California.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

General Contractors Standing as a Class

A San Francisco material man takes issue with the general contractors of that city on the reasons for the difficulties that beset the contracting business. He ventures the opinion that the general contractors do not have the standing as a class in the business community that they should have; that their troubles are chiefly of their own making and that the remedies are in their own hands. These views are set forth by Mr. O. P. Shelley, who, after listening to a discussion at a meeting of the general contractors on the ills of the craft, addressed a letter to Mr. D. B. Farquharson, a general contractor, in which he says:

It appeals to me that the general contractors are too apt to be merely resentful because they do not have the standing as a class they should in the business community; why not look the facts in the face? Dunn or Bradstreet hardly list any contractors, giving as a reason, when asked, that their assets are too variable, too unstable and in fact, consist too often of prospective profits. How can a business section or class get commercial weight or standing when they are unable for the most part to get commercial rating?

Contractors cannot get standing as a class as long as they are inadequately financed. Instead of being properly financed through the banks, most of the contractors figure on putting only a very little money into the job for the first labor payrolls and thereafter letting the job finance itself; the material men and sub-contractors being told to "wait till the owner makes his payments" to the general contractor. It is certainly a serious drawback to the standing of the general contractor that membership does not mean that a member is properly financed nor even that he pays his bills.

No class can have the standing it should have while its members themselves usually attribute the success of some member in landing a contract to "forgetting" or "leaving out" part of the estimate; in other words to a "mistake."

Why not follow the lead of all other associations in reports, analyses, standardized forms and methods? Why not get up model estimate forms, model specifications, standardize the methods of estimating "quantities" for each branch of contracting, average unit prices for the different units, average square foot or cubic foot prices for different classes of buildings to check estimates by?

When the general contractors make themselves into a progressive, forceful business unit then they will forge ahead and of a certainty take a forward place in the business community, but not before.

While some of the points raised by Mr. Shelley are well taken his general view ignores the primary cause for the demoralization of the building contracting business and its consequently unfavorable position. There was a time when no one thought of becoming a contractor until he had acquired a certain definite knowledge of building construction and methods of handling it and had accumulated some capital of his own or had secured adequate financial backing. That was before the days of the present mechanics' lien laws, when the building business was conducted on the same general principles that applied to all other lines of business.

The mechanics' lien law was invented to protect laborers and material men against fraud at the hands of unscrupulous persons, contractors and owners alike. The hope that it would eliminate these evils has never been realized. Instead of operating to the advantage of the legitimate skilled contractor possessing adequate financial backing it has intensified the competition which he has

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had to meet from unskilled and inexperienced persons embarking in the business. The lien laws have made it possible for men with no knowledge of building construction, and without financial backing to obtain contracts and do business on the credit at least of the land on which the building was erected, if not on the credit of the owner.

Earnest efforts have been made by the legitimate contractors in every community to organize their craft in such a manner as to eliminate this unwholesome competition. That they have not been able to do so is due more to the fact that their skill and capital have not received the substantial recognition to which they are entitled. Contractors do not fix their own credit ratings on the books of the material dealers. That is done by the material dealers themselves, and unfortunately credit is too often extended upon the contract instead of on the credit rating of the contractor. As long as men can do business without putting their own capital into it, that business will remain open to anyone, regardless of qualifications or individual financial responsibility who can secure materials on credit and meet payrolls from money advanced on contracts. This is a situation which the legitimate contractors alone can never control or remedy because they represent only one of several interests involved. It is a matter of cooperation.

Legitimate contractors may formulate standards for estimating and methods of doing work and do many other things that would be of mutual benefit, and, no doubt, redound to their credit and standing, but this will not prevent the eternal errors of the human mind or eliminate the irresponsible and incompetent contractors. And until the irresponsible contractor is eliminated the legitimate contractor will continue to suffer because of the too common error of judging contractors as a class by the unqualified and irresponsible men in the business, for publicity is always given heard about the work of the skilled and responsible men.—Southwest Contractor and Builder.

* * *

Editor's Note.—To the above Mr. Shelley adds the following comment:

A perusal of the back numbers of this and other magazines of that period will show that when the present Mechanics' Lien Law was up for passage a few years ago, the strongest advocates of it were the general contractors, their arguments being that by putting the final responsibility up to the owner, the latter would care to deal only with financially responsible and able contractors, and that this would tend to eliminate the "fly-by-night" element.

As a matter of fact the present line law did tend to steady the contracting business greatly and it is too bad the general contractors do not see more in its possibilities than to keep in good standing a member who may hide behind it.

Bonding companies have been a most fruitful source of keeping irresponsible contractors in the field; the lowest bidder being fairly pursued to take out a bond without adequate checking of either plans, quantities, or estimate, nor sufficient knowledge gained of the contractor's resources. This has been largely curtailed in the elimination of price cutting on bonds, but in the past many bonding companies undoubtedly relied in case of a contractor's failure to wear down the claimants through legal processes.

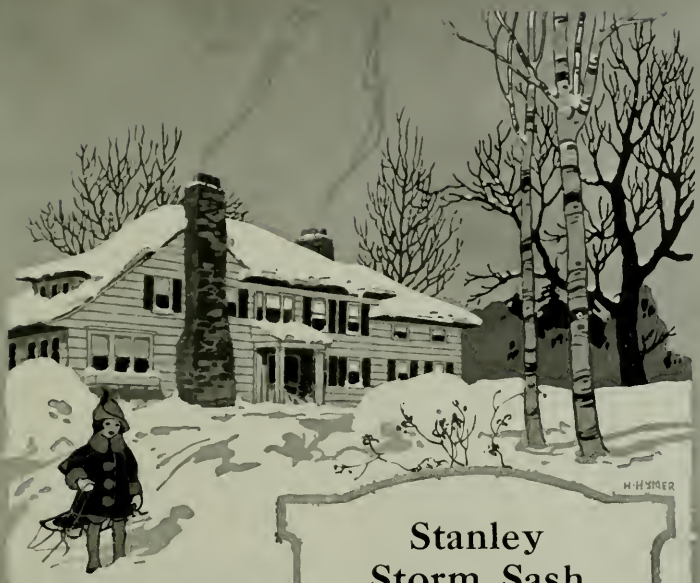
"As a man thinketh in his heart. so he is," is a truth being slowly but surely appreciated, and certain it is that the general contractors can make themselves a distinct and respected power in the business community if they make up their minds to do so.

Concrete Boards Used in Building Construction

Boards of concrete, with joists, rafters and stair-frames of the same materials are used in the construction of a novel building in Los Angeles, California, the whole being set upon a concrete foundation. Though put together after the manner of a frame structure, the building is as fireproof and durable as the more common types of cement houses, but it requires less material and is lighter in weight.

The various parts are poured into forms on the ground near the site, and in that way the danger of breakage is eliminated. The clapboards are poured in sets of ten, the forms being securely clamped together, and the cement allowed to harden in them for several days. Then they are taken out and allowed to cure before being set up. This is done while the preliminary work is going on, such as excavating and laying the foundation.

The joists, rafters and other parts are formed in the same manner, and various types of reinforcing are used for each. The boards are reinforced with mesh like chicken wire, while the timbers have iron rods of varying thickness to strengthen them. These are allowed to project at one end in order to fit into corresponding holes in other timbers, so that the whole framework dovetails. The method of attaching the boards to the 2x4s is with nails, and nail holes are bored into the cement boards before they have set by running a wire through them. As the cement timbers will not take the nails a strip of wood about an inch and a half thick is wired to the cement scantling.—Scientific American.



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National Contractors' Association Organized at Atlantic City

AT a meeting of representative general contractors at the Marlborough-Blenheim hotel, Atlantic City, in July, resolutions calling attention to the need of a national association of general contractors were adopted in the following terms:

"Resolved, That there is a great need for a National Association of General Contractors, and that the general contractors here present appoint a committee to work out ways and means in order to perfect a permanent national organization of general contractors; that we pledge our loyalty to the government at all times and support this convention in the objects of its organization."

It was suggested that the name of this organization be the General Contractors' Association of the United States. Among those who addressed the meeting was Mr. C. P. Massard of Des Moines, Ia. Among those in attendance from the Northwest was Mr. Fred H. Romer, of the F. J. Romer Construction Company, general contractors, St. Paul.

A sub-committee was appointed with power to take up with different associations and individuals the consideration of the formation of a national association, the objects of which will be:

1—To co-operate with the government for the winning of the war by placing every resource of the building industry at the immediate service of the country.

2—To save the non-war branches of the building industry from impending disaster, and to spur on private building.

In order to further this second purpose, a war industries committee was elected to establish headquarters in Washington. This board is to work for concessions which will enable the building trade to survive material and transportation embargoes. It will also co-operate with the government by placing knowledge of the resources of the building trades in such shape that immediate service can be given when needed.

The convention was called by the Chamber of Commerce of the United States at the instigation of the committee elected at an informal meeting held June 14 in New York City. The attendance was large, representatives of the branches of various industries from all sections of the country being present.

Mr. D. A. Garber of the Northeastern Construction Co., 225 Fifth avenue, New York city, is chairman of the committee.

Building Costs Today and in 1915

There is a great amount of misinformation extant about increased building costs. Of course it costs more to build now than before the war, and the recent raise in freight rates has been an added factor tending to increase costs.

But it is a fact that building contractors are figuring very closely, and the same is true of many producers of building material. An illustration of this point is found in a recent experience of the A. Moorman company, of St. Paul, builders of banks. In 1915 the Bedford stone used in the construction of a bank in western Wisconsin, built by this company, cost $525. The company recently built a bank after similar plans in Minnesota. The Bedford stone used in the construction of this building cost $554, and the increased rate accounted for the increased cost.

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Big Order for Steel Sash

The San Francisco office of the Detroit Steel Products Company announces that a contract for "Fenestra Solid Steel Sash" has been secured through the Aberthaw Construction Company for the Liberty Shipbuilding plant at Alameda. Approximately 500,000 square feet of sash is required for this operation, together with a considerable number of mechanical operators.

Why Did This Floor Fail?

An unusual failure in a concrete floor slab is discussed by Mr. B. H. Wait, Dist. Eng. of the Portland Cement Association:

A floor recently laid in a bakery did not get hard. The aggregates were those successfully used in other work and the cement of a standard brand. Both were subsequently tested and found satisfactory. A second trial in the bakery gave similar results. The work was done by experienced workmen.

I have had an opportunity to inspect the job in question and find there was intense heat present in the bakery, and as the sand and stone used were excellent, the failure was without doubt due to the drying out of the mortar too quickly, or to the fact that the cement had been stored close by the furnace for some time. When mixed, the materials, having been stored inside and being hot, the cement evidently flashed, with the resultant failure. This happened the second time with a new batch of cement stored under the same conditions. After the second failure, the work was replaced with mortar mixed outside the bakery, and the work was successful. The patches last placed are in excellent condition.

There may be the possibility that the concrete in the first place was not properly wetted down and cured before placing, but it would be well to note the danger of using material in the aggregate that has been subjected to, and mixed in, an excessive heat.

Licensed Architects

There are now twenty-four resident licensed architects in North Dakota and six non-resident architects, with several applications pending.

Three Homes Planned

Three new homes are soon to be built in Broadmoor, San Leandro; one by Mr. E. G. Mansfield, one by Mr. O. L. Starr, and a third by Mr. C. L. Best.

Building Laws Must Be Changed to Make Concrete Houses Possible

The concrete house has never yet had a real chance. It has in effect been legislated out of existence by our building codes.

This magazine has repeatedly pointed out the absurdity of existing building laws as applied to concrete houses. The present laws were framed in the most part for conservative construction in large buildings. They fail completely to recognize concrete as a house building material, except in some instances in the case of concrete block.

More than this, there is much evidence to show that makers of other building materials have been alive to the potentialities of concrete and have seen to it that laws in many cities are such as to make concrete house building prohibitory. Instead of encouraging fireproof dwellings, building laws actually put a reward upon tinder-box construction by insistence upon grossly excessive use of fireproof materials.

On page 55, in his report on concrete houses before the American Concrete Institute, Leslie Allen of the Aberthaw Construction Co., signifies the intention of the housing committee of the Institute to compile a model code for concrete houses —a code that will be just to concrete and to home builders.

This is a work that is needed now. It will take time to draft the code, and much more time to secure its adoption by any considerable number of cities. Presumably such work may have little effect on war work; for Government activities will no doubt have right of way over local anachronisms, but it should be done now, that the track may be clear for the concrete house after the war.—Concrete.

Development of Islais Creek

Plans for the complete development of the India Basin-Islais Creek section of the San Francisco water front have been prepared by Mr. F. G. White, chief engineer of the Board of State Harbor Com-

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missioners. The plan is the most comprehensive that has ever been suggested for the improvement and development of the vast section of water and rail terminal property owned by the State in that section, which is expected ultimately to become one of the greatest industrial centers on the Pacific Coast.

Recognizing that a general scheme of development must be adopted that would co-ordinate with existing water-front improvements, the Harbor Commissioners expect to develop the property along logical lines, beginning at the south side of the channel and gradually extending the operations until a complete line of wharves, bulkheads, warehouses and other facilities, including railroads, stretches along the water front from Fort Mason to Hunter's Point.

Included in the immense plan, which, when completed, will have cost more than $10,000,000, are the following features:

Eight large piers, 1500 feet long and 235 feet in width, with a slip breadth of 350 feet between piers.

Multi-storied warehouses extending on the bulkheads in front of the piers.

Coaling and heavy cargo bulkhead wharf on south side of the channel to be equipped with electric cranes for handling heavy pieces of cargo.

Coaling sheds and car ferry slips.

Extension of the Belt Railway, with adequate terminals and yardage.

A new plan for laying out an industrial center to be projected by the State.

Progressive development to be carried out as rapidly as the demands of business enterprises dictate.

Friction of Water in Pipes

The Bureau of Economic Geology and Technology, University of Texas, has recently published a bulletin, "The Friction of Water in Pipes and Fittings," by Mr. F. E. Giesecke, head of the Division of Engineering, Bureau of Economic Geology and Technology.

This bulletin describes in detail a series of experiments made at the University of Texas to determine the friction of water in pipes and fittings, with particular references to the application of the developed data to the design of hot water heating systems. The experiments described in this bulletin show that the friction of water decreases as the temperature of the water increases and that, for ordinary ranges of temperature, the friction of water in one foot of new and clean black pipe is

$$\frac{.01533}{t^{.19}} \frac{v^{1.77}}{d^{1.275}}$$

feet of water of the same temperature as that flowing through the pipe; t being the temperature of the water in Fahrenheit degrees; v velocity of the water in feet per second, and d the internal diameter of the pipe in inches.

The experiments also show that the friction of water in galvanized iron pipe is slightly greater than that in black pipe, that it is somewhat greater in used pipe than in new pipe; that the friction in drainage elbows is considerably greater than in ordinary elbows, and that the relation between the friction in short radius and that in long radius elbows is quite variable; that the friction due to unreamed ends is relatively much greater in small pipes than large pipes, and other interesting facts.

A copy of the bulletin may be secured by writing the Chairman of the Committee on Publications, University of Texas, Austin, Texas.

Comparative Costs of Building

A WRITER in the Building Age attempts a comparison between the cost of building in 1916 and 1918, a simple workman's cottage, and figures the increase at 26 per cent. Here is how he figures it out:

House, 24x26. Cellar wall of cement blocks.

	1916	1918
Cost of excavation and cellar wall	$250	$300
Concrete bottom of cellar	60	75
One coat patent plaster throughout the house	85	100
Lathing, labor only	15	25
Hardware, nails, hinges, locks, etc.	40	75
Plumbing fixtures, kitchen sink, range boiler, laundry, toilet, bath	200	300
Lumber, windows, inside finish Georgia pine; clapboards, No. 1 pine; all lumber and lath	850	1,000
Material and labor on chimney—cellar to top	30	40
Slag roofing, three-ply	35	50
Paint for two coats; labor	35	60
Varnish and labor; two coats inside	25	35
Labor—carpenter and helpers	500	600

The writer continues: I obtained a bill of material from the owner and builder. In figuring up the quantities I find the total cost at 1916 prices would have been about $2,125.

I have taken prices given by a lumber company on this house in 1916 and on the same in 1918. The prices on the largest items, the material, practically agree with those which I give. For further data I have taken the prices given by a mail order house in 1916, and again in 1918 on a number of houses, and find the advance average some 26 per cent. Labor, masonry work and material will have about the same rate of increase, therefore I believe we can call this about the actual rate of increase in the cost in the last two years.

Shipbuilding Plant

Mr. John Reid, Jr., is designing the new Rolph shipbuilding plant to be built on the Alameda estuary.

Facts from the Field—

The Country's Largest Saw Mill is being Painted with PABCOAT—The Stone Veneer

With the characteristic foresight of pioneer lumbermen, the Red River Lumber Co. began, thirty years before the building of their plant, to cruise and buy timber in California.

Today the Red River Lumber Company has at Westwood, Cal., the largest producing saw mill in the United States—175,000,000 feet of pine and fir will be cut this year.

This vast plant is thoroughly modern — electrically driven throughout —and requires more than 2000 employees for its operation.

After carefully investigating the unusual value of PABCOAT, and particularly its preservative and fire retarding properties, the Red River Lumber Company is using PABCOAT extensively — both inside and out — in painting their plant buildings.

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"A Street Ought to Be Built Like a Hospital Floor"

For years this journal has contended that city pavements should be so hard and smooth that they can be washed like a floor, and kept free of germs. We are glad to note that others are coming to the same conclusion. The health commissioner of Cleveland, Ohio, Mr. R. H. Bishop, Jr., M. D., recently said:

The conditions of this warfare are not satisfied when a broom is passed across the irregular surface of some worn-out pavement, leaving the interstices filled with moist decayed filth. A street ought to be built like a hospital floor, with a uniform, non-adhesive surface, so drained that the application of water from a flusher will wash every particle of filth from its moorings and carry it clear to the sewer without interruption.

The workingmen who make up the population of congested localities deserve the best that the municipality can do for them. The first thing I would suggest would be the wholesale tearing up and resurfacing of every battered street in the populous districts. The objection that better public improvements would be reflected in higher rents, thereby compelling the poor man to move to more poorly paved streets, is not valid because our paving program includes all streets. Dr. Gorgas' work in Panama became effective only after grouted brick pavements had been laid upon practically every street of the city, thus establishing a basis for public cleanliness. It seems to me that many American cities can learn for themselves what the United States has already taught the tropics.

Mr. Bishop has put the matter none too strongly. Streets should be made to be flushed, and they should be flushed clean every day or every few days, depending on conditions. Infantile paralysis, "colds" and lung diseases are all undoubtedly spread as part of the dust that is blown about. Knowing this, it becomes the duty of civil engineers to persuade the public to authorize the flushing of all streets, and, to this end, the laying of pavements "built like a hospital floor."—Engineering-Contracting.

Alter Bank Buildings

Mr. W. H. Toepke, 942 Market street, San Francisco, has prepared plans for alterations and new fixture and vault work in the Bank of Half Moon Bay.

Good Work by Contractor Hannah

Mr. J. D. Hannah has been awarded two important contracts the past month. He is building the new wharf and ways for the Rolph shipbuilding plant in Alameda and the city of Richmond has awarded him some water-front work that will keep a large force of men busy for some time. Mr. Hannah has recently completed two important water-front contracts and Chief Engineer White of the Harbor Commission has complimented the builder for his thorough workmanship. Pictures of the piers and sheds constructed by Mr. Hannah are shown elsewhere in this issue.

Workmen's Compensation Insurance

In 1914 the contractors of Wisconsin paid nearly $400,000 for workmen's compensation insurance. About one-half of this sum was returned to the workmen in the form of benefits and the remainder went for the expenses and profit of the insurance companies.

Dairy Building

O'Brien Brothers, 240 Montgomery street, San Francisco, have completed plans for a two-story brick and concrete dairy on Turk street, near Pierce, for the San Francisco Dairy Company.

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In 1823, water mains constructed of bored-out logs were installed in the streets of the little frontier town of Cincinnati. The logs were reinforced at the ends with old-fashioned iron bands like the one here pictured.

Excavations in the streets of the modern city often uncover these relics of early days.

The good serviceable condition of the iron bands invariably causes remark, so sharply is it contrasted with that of most of the products of modern furnaces after but a few years of service.

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The New Town of Clyde

Work is now being pushed on the construction of a new town in the San Francisco bay region called Clyde and designed especially for shipbuilders employed by the Pacific Coast Shipbuilding Company, whose yard is on the upper Suisun bay.

The initial investment, it is announced, will exceed $1,000,000. A feature of the plan is to be a special track between the town and the shipyard gates, providing rapid transit capable of virtually indefinite expansion.

This housing project is being carried out with the backing of the Pacific Coast Shipbuilding Company and with the assistance of the United States Shipping Board Emergency Fleet Corporation.

A hundred and eighty-five acres are included in the town site, which has been laid out along lines embodying the latest ideas of town planning.

Messrs. G. A. Applegarth of San Francisco and E. W. Cannon of Oakland are the architects of the homes and other buildings. The engineers are Messrs. Sloan and Robson and the consulting engineer is Mr. H. T. Cory. The grading is advancing rapidly under the direction of Messrs. Bos and O'Brien, and Mr. J. F. Maganini, contractor, is at work on the houses.

The work has been started on a scale calling for the completion of two houses a day. Within a short time 150 men will be at work on the town site. The houses, to be so placed over the site that present and future crowding is avoided, are to be put up in units of twenty to facilitate construction.

Personal.

Mr. Geo. W. Kelham of San Francisco is preparing plans for a bank building at Tracy to cost $35,000. It will be constructed by the P. J. Walker Company.

Sand and Gravel to Be Given Priorities in Accordance with Utilization

A war service committee representing the sand, stone and gravel industry has been appointed following a conference between men engaged in the industry with the War Industries Board. For purposes of war administration the country has been divided into seventeen regions, Ohio and Michigan comprising one. As a result of the conference, it is stated, priority orders will be issued according to the following programme: Producers of fluxing stone will have a clear way, as their product is essential to the manufacture of steel; ballast producers will also be given transportation facilities, in order to keep railroad beds in proper condition; limestone used for fertilizer will be given as adequate facilities as possible, while materials used in road building will receive consideration when materials for other purposes are not demanding immediate shipment. Exception will be made for urgent road work, but for general purposes road building material will be given consideration after stone and gravel for other purposes mentioned have been taken care of.

Some of the Bits Your Liberty Bond Will Do

If you buy a $100 bond of the Fourth Liberty Loan, you are lending the United States Government enough money to feed a soldier in France a little more than seven months. Or you have furnished enough money to give him a complete outfit of winter and summer clothing, including shoes and stockings, and slicker and overcoat and blankets, with enough left over to arm him with a good revolver. You have done that much to beat back the Hun.

It takes $35 more to arm him with a rifle with a bayonet on it, and if you buy a second $100 bond you furnish him this rifle and 1000 cartridges for it; and there will still be enough of your money left to purchase a good-sized bomb to throw in a dugout, or demolish a machine gun, together with the Huns operating it.

Detecting Submarines by Searchlight

Submarines can be detected ten thousand yards or more from shore by an electrical searchlight. There are cases on record where ships have been spotted at a distance of nine miles. These figures are based on a sixty-inch mirror and twenty-thousand-watt arc and are said to be accurate.

O'Brien Bros. Busy

O'Brien Bros., Inc., architects at 240 Montgomery street, San Francisco, have completed plans and let contracts the past month for new work aggregating in value over $200,000. The improvements include a concrete warehouse to be erected at Eddy and Jones streets for the Security Storage Company and which will cost $120,000; a reinforced concrete commercial garage for Dr. Shumate at Larkin and Sutter streets, and a large concrete dairy to cost $40,000.

"I Have Nothing to Sell"

"My product is 'way over-sold. I cannot get enough materials. I have difficulty getting freight cars. Labor shortage and various other things have reduced my production so that I cannot begin to fill orders. Every new order is an embarrassment. I have nothing to sell."

"Possibly so," we answer, "but you have still to sell and to keep sold that part of your assets which outweigh in value your entire plant, equipment and material—your name and your good will. Your name and your brand should be kept sold to the consumer—so that he will keep on **wanting** your goods until the day when he can get them."

How about it!

Don't you think that a concern that has spent about **40 YEARS** at it, ought to come pretty near being able to make this class of machinery to suit **You?**

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Quarry and Electrical Public Hearings

The Industrial Accident Commission has recently conducted a series of public hearings to consider tentative quarry safety rules and tentative electrical station safety orders. For some time committees of employers and employees have co-operated with the safety engineers of the commission in preparing the tentative rules and orders. Mr. A. R. Wilson, vice-president and manager of the Granite Rock Company, is chairman of the Quarries committee. Mr. J. P. Jollyman, engineer of electrical construction for the Pacific Gas and Electric Company and the representative of the National Electric Light Association, served as chairman of the Electrical Station committee.

During the twenty-four months of 1915 and 1916 there were 32 fatal injuries, 60 permanent injuries and 2314 temporary injuries in the quarries of California. The total cost in compensation and medical fees was $176,034.

Electricity caused 739 injuries in California during 1915 and 1916, divided as follows: Fatals, 50; permanents, 13; temporaries, 676. The sum of $153,566 represents the medical and compensation costs.

Concrete Ships Win Approval of U. S.

The unqualified declaration that the United States Shipping Board is convinced of the practicability of concrete cargo carriers and proposes to build them upon a more extensive scale, was made recently at Atlantic City by Mr. H. J. Brunnier, of San Francisco, supervisor of concrete ship construction for the Emergency Fleet Corporation. Mr. Brunnier said:

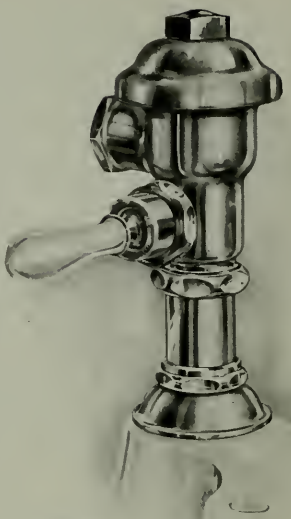
Forty-two concrete ships provided for in our present program are only a beginning, for more are to be provided for as rapidly as practicable now that their practicability has been established to the complete satisfaction of the Emergency Corporation.

Experience has demonstrated that the concrete ship is not only lighter but costs less than wooden vessels. The Faith, our first reinforced concrete craft, cost little more than $32 a ton deadweight, but her successors probably will cost as high as $50 a ton. Wooden ships today cost the Government from $87 to $100 a ton deadweight and some much higher. Steel ships cost $125 a ton deadweight and upward. These figures are for hull alone.

The time of construction is virtually the same for all. How long concrete ships will last is the only question that is now causing any worry for we know that a concrete vessel during the life now allotted is equally as strong as a steel ship.

Dissolve Partnership

Messrs. John H. Robertson and Frank M. Hall announce the dissolution of the brokerage firm of Robertson & Hall, First National Bank building, San Francisco. Mr. Hall will be associated with the Globe Indemnity Company, and Mr. Robertson will continue business as a general insurance broker, with offices at 621 First National Bank building.



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Ferry Building Built Twenty Years

The twentieth anniversary of the completion of the Ferry building in San Francisco was observed, July 31, by the California State Harbor Commission. The first session of the commission was held in the building on August 31, 1898. Remarking on the anniversary, Acting President John H. McCallum declared: "It is safe to say that the development of harbor facilities will be kept ahead of the commerce of the port." The building cost $1,000,000 when it was erected, and since then two bond issues of $20,000,000 each have been floated for harbor improvement. The income of $30,000,000 derived in the last twenty years has been devoted to port development.

French Mission to Visit American Industrial Plants

A mission composed of French ordnance engineers, technical experts and shop foremen is now in this country for the purpose of studying American methods of manufacture of war material. The mission will visit the principal arsenals and private plants engaged in the manufacture of war materials and will not only consider the engineering features but production and inspection as well, where the particular projects are far enough advanced to permit it. All communications relative to the activities of the mission should be addressed to Secretary Franco-American Ordnance Committee, Army-Navy Bldgs., Group B, room H 215, Washington, D. C.

Engineers' License Law

Representatives of eleven societies in Iowa, including state and national organizations of engineers and architects and clubs of engineers, at a recent meeting laid plans for the enactment of an engineers' license law. A committee, including one representative from each group, was chosen to draft a bill to be sent to each society for amendment and approval. The law sought would classify engineers by examination, contain provisions for reciprocal license privileges with other states, and be designed to protect the public in getting competent engineering service.

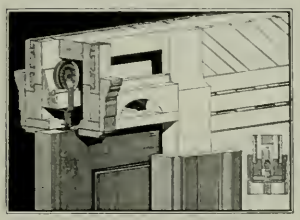
Architect in Shipbuilding Work

Editor The Architect and Engineer: The copies of your magazine have been very much appreciated and I enclose herewith my check in payment for new subscription. I have closed my office for the duration of the war and am at present engaged in the shipbuilding business with the Southwestern Shipbuilding Company, so will ask you to kindly send magazine to my residence, 1034 Stratford avenue, South Pasadena, as I only get up to my office on rare occasions.

I will appreciate notification of any opportunity, that may come to your notice, whereby an architect can be of service in war work. Of course there is a great field in shipbuilding, but a trained architect might be of more value in some other line.

Yours very truly,
B. G. Horton.

See this Pitcher Hanger?



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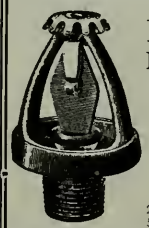

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Sixteen Military Hospitals

Washington.—Plans for the construction of sixteen great convalescent and reconstruction hospitals for American soldiers, to be erected in each of the military districts of the country, have been practically completed. Work on them will soon be started.

Details are now available of the method in which America will put her disabled soldiers and sailors back on their feet, ready to pursue careers of usefulness.

The plan as drawn by Major H. Brooks Price, sanitary corps, national army, the architect of the division of physical reconstruction, shows a proposed group of buildings designed for complete reconstruction work. This particular group would accommodate 1000 beds, but extensions could easily be made to increase the capacity to 3000 beds or more.

The advantages of this particular plan over other types of general hospitals for reconstruction are based on its compactness, which will give it increased efficiency and facility of administration. Moreover, it will cost less to build, require less acreage and involve fewer steps in communication.

The erection of these hospitals, it is felt, would do more than any other single factor to facilitate the effective carrying out of the Government's plans for "reconstruction"; to hasten the soldier's physical and vocational restoration and his return to society.

The purpose of building the hospitals in each of the sixteen military districts is to bring home influences to bear on the wounded men as much as possible. The disabled heroes are not to be isolated in strange corners of the country; each is to be sent to the hospital nearest his home.

Oakland Enterprise

The most modern, scientific baking plant in the northern part of California is being erected in the city of Oakland, where it adjoins Emeryville, on the block bounded by Forty-sixth, Adeline and Linden streets.

This baking plant is the first unit of the Remar Company, a corporation capitalized for half a million dollars. This indicates an appreciation of Oakland's growth and wonderful future that such a great plant should be located on the east side of the bay.

The Remar Company has also purchased the entire adjoining block to the south, on which are to be built additional units.

The first baking unit now being erected is to be a beautiful two-story building with a 175-foot frontage facing on Forty-sixth street, and a 160-foot frontage on Linden street.

The erection of the Remar plant is under the personal direction and supervision of Mr. Frederick W. Whitton, construction manager.

Architects Aid Great Housing Survey

A special committee on Industrial Housing and Transportation appointed by President D. H. Burnham of the Illinois Chapter of the American Institute of Architects is working with a large commission in making a complete survey of the industrial district known as the Indiana steel towns of Lake county, including Gary, Hammond and Indiana Harbor. It is being made for the Industrial Housing Corporation and follows in general the plan of similar surveys made in Boston and Philadelphia. Members of the architects' committee are Edward H. Bennett (chairman), Elmer C. Jensen, Richard E. Schmidt, George C. Nimmons, William E. Parsons, Howard Shaw, Martin Roche, D. H. Burnham.

This committee is working in conjunction with a larger committee of twenty members appointed by the Illinois State Council of Defense, of which Charles A Munroe is chairman.

Oakland's Concrete Ship Plant

Work is being rushed at the Government Island concrete shipyard in Oakland harbor, where eight of the new stone ships are to be built. Piling, lumber and other materials are being sent to the site, and it is hoped to have the shipyard in commission in record-breaking time. A bridge from the Oakland side of the estuary will expedite the transportation of materials.

Tunnel for Market Street

Plans for the proposed subway across the loop at the foot of Market street, San Francisco, will be submitted to the Board of Harbor Commissioners, according to an announcement by City Engineer M. M. O'Shaughnessy. The cost of the project is estimated at $150,000, to be equally borne by the city of San Francisco, the United Railroads and the Harbor Commission.

Peters in War Work

Mr. Lawrence Peters, president and general manager of the Buttonlath Manufacturing Company, has reported to the officials in Washington for service in the military transport division of the U. S. Army. When in Washington recently on business for his company he was asked to volunteer in this branch and immediately did so. Mr. Peters expects to remain in Washington perhaps sixty days assisting in the reorganization work and then be sent to France.

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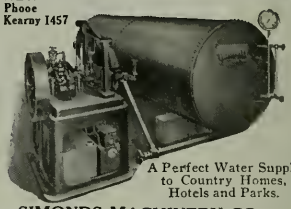

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* * *

"If the present war continues three years, it is estimated that 20,000 crippled American soldiers will return during the first year; 40,000 the second year; 60,000 the third year—making a total of 120,000 disabled men to be absorbed into the industries of the country in the next three years."

Woman Architect Busy

Miss Elizabeth M. Austin, 2395 Filbert street, San Francisco, has prepared plans for alterations to the apartment house at 56 Thirty-third street, Oakland, the property of Miss Anna May. Miss Austin has also prepared plans for an addition to the residence of Mrs. Minnie Aguilar on Union street, San Francisco.

Fixture Contract Awarded

A contract has been awarded to the Fink & Schindler Company of San Francisco, for furnishing new bank fixtures for the Farmers' National Bank at Fresno, California. Mr. E. Mathewson is the architect.

Hospital Additions

Mr. Sam L. Hyman, Crocker building, San Francisco, is preparing plans for additions to a private tubercular sanitarium near Los Gatos, also for alterations to a residence near Burlingame.

Move to Better Quarters

Messrs. H. E. Bittmann and G. H. Battee, successors to the Ayesworth Agencies Company, have moved from 591 Mission street, San Francisco, to 84 Second street, where they have well appointed offices and ample warehouse facilities for their varied stock of manufacturers' supplies. This firm are agents for such well known houses as the Holtzer-Cabot Electric Company, manufacturers of motors, dynamos, annunciators, telephones and bells; Francis Keil & Son's push button switches, speaking tubes, letter boxes, etc.; Newton Manufacturing Company's "Toggie" switches; Standard Lock Company's Champion door openers; Steel City Electric Company's outlet and switch boxes, floor boxes, etc., and the Bradshaw sanitary garbage chute.

These Contractors Are Busy

Mr. R. W. Littlefield, general contractor of Oakland, has been awarded the contract to build new quarters for civilian employees at the Mare Island Navy Yard hospital, Vallejo. The contract price was $29,795.

The Houghton Construction Company, Flatiron building, San Francisco, has taken a contract for approximately $27,000 to build a reinforced concrete roundhouse of nine stalls at Tracy, for the Southern Pacific Company.

For Carved Work---

There is nothing more effective than Vermont Marble. Notice the illustration. It represents one of our carvers at work on a White Rutland marble altar panel, which was placed in the Vincentian Convent, Albany, N. Y., by the Montague-Castle-London Company.

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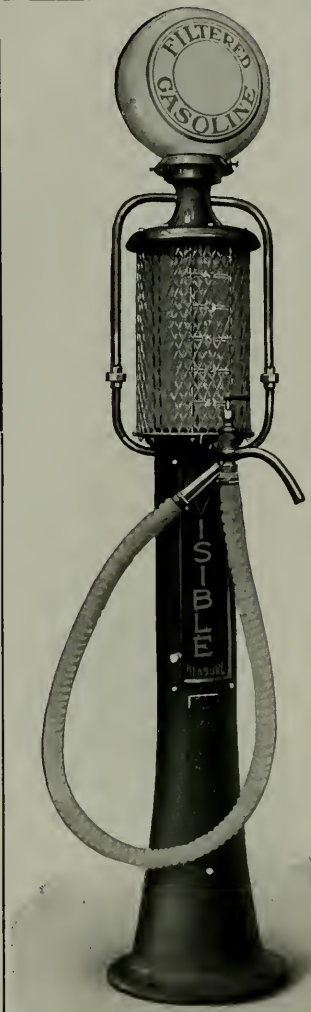

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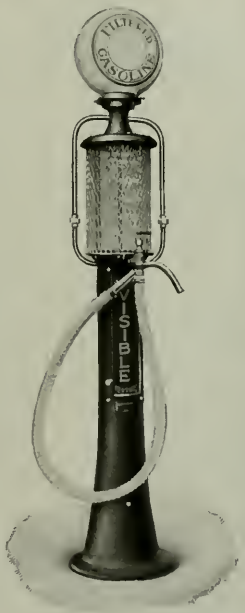

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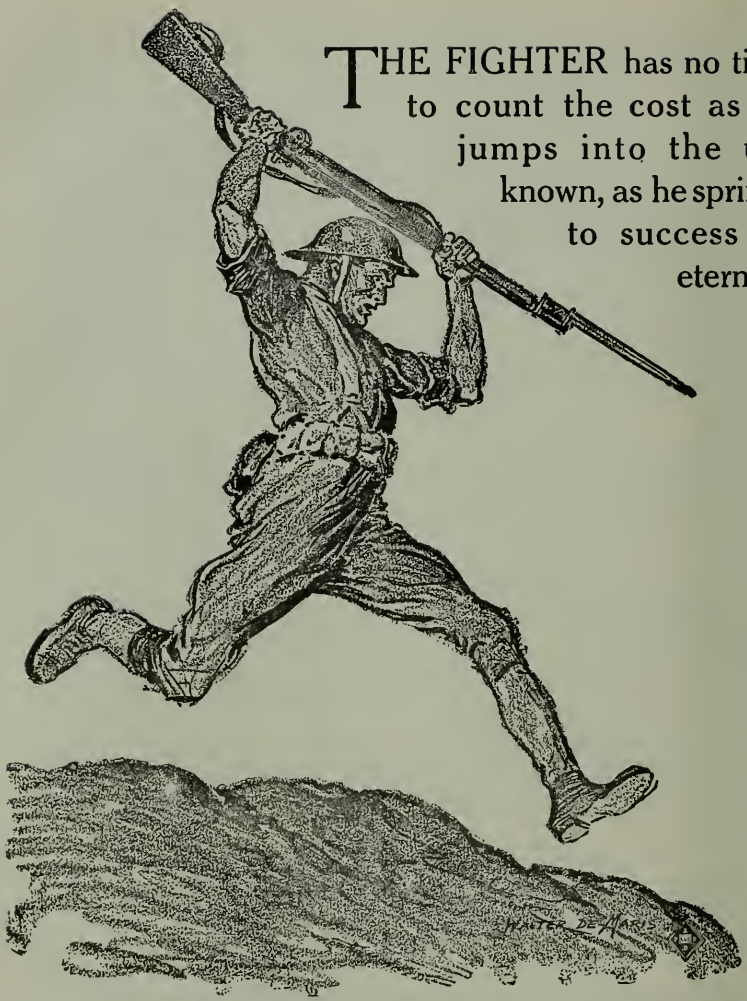

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To Employers and Important Executives—

A Government Proclamation

The Army Needs Your Influence in an Emergency—

This is a man-to-man appeal for you to help the Government grasp a great opportunity, and for you to discharge a grave responsibility.

The Allied programme to speed up the war and quickly bring about the final overthrow of the German Armies calls for an immediate mustering of America's final contribution of man-power. We must raise our army to 5,000,000 men at once!

Nearly 3,000,000 of the needed 5,000,000 are already under arms—but Class 1 of the Draft will be exhausted by October 1. To go into the deferred classifications and take men essential to industries, and men with dependent families, is unwise.

A new Class 1 must be created at once. Laws are being framed calling upon men within certain ages to register (the War Department's recommendation is for 18 to 21 and 32 to 45 years as the age limits), and the President will appoint a Registration Day early in September.

Thirteen million men must register in a single day. Later these men will be classified. Industries will not lose men who are absolutely essential to them, and families will not lose their bread-winners. But every man must register.

You are a Center of influence

As an employer or an important executive you are a center of influence, and the Government needs your active co-operation in putting through this gigantic task without confusion or delay. Thirteen million men must be *told* of the law between now and Registration Day (watch newspapers for date); and they must understand the *why* of it, and just *where* and *how* they are to register. For these details ask your Local Board, or your city or county clerk.

You can reach the men in your employ more effectively than they can be reached from the outside. We earnestly urge, therefore, that you make definite plans, in the interest of a speedy VICTORY, and in the interest of your own business, to see that all of your men are properly informed, so that they can be promptly and correctly registered when the day comes.

Every man between the ages to be specified in the President's Proclamation must register.

How you can help

Start at once to get in touch with your men. Bring to their attention the *need* for the registration and the *facts about it.* Get in touch with your Local Registration officials and co-operate with them.

Here are a few suggestions:

Arrange for talks to your men; place inspirational and informative bulletins on bulletin-boards; establish Selective Service Information Bureaus; inclose slips in your men's pay envelopes.

Arrange for definite hours when the men in the different departments or sub-divisions of your business shall be allowed time to go and register. Post full lists of the men in your employ between the specified ages, the men to check off their names after they have registered.

Many other ideas, applicable to your own business, will doubtless occur to you.

This is an emergency such as this country has never faced before, and the Government must depend upon you to bring all of your influence and inspiration and ingenuity to bear out this problem, that this crisis in the war may be met in a way that shall avoid hardship to the businesses and families of the Nation.

Signed:
E. H. CROWDER,
Provost Marshal General

Approved:
NEWTON D. BAKER,
Secretary of War

Watch the newspapers for the date and further details

This space contributed for the Winning of the War by the publisher of The Architect and Engineer of California.

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Time is the essential in these operations, therefore,

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were called for, delivered on time and are now giving satisfaction and sanitary, pleasing, attractive conveniences in thousands of workingmen's homes in the numerous housing operations so far completed.

The pictures show the accomplishment of the Bridgeport Housing Company, R. Clipston Sturges, architect. They are stated to have pointed the way to all others. Each home of their various large developments contains all that today's standards call for—individual heating plant, plumbing of the most modern type, brick of good texture and interesting bond, roof of slate, etc.

> **"They have given a demonstration of worthwhile building with substantial materials, looking for their return over a long period of low upkeep costs and continuing value."**—C. C. May in Architectural Forum.

In the Connecticut Avenue Development there are 143 houses; in the Lordship Manor Development there are 20 houses; in the Fairfield Development 35 houses. For these houses we furnished staple bathtubs, P-4208 lavatories and P-6800 kitchen sinks.

Our Promotion Men can be of service in giving information on most suitable types of fixtures and quantities in stock. Our books "Standard Plumbing Fixtures for the Home" and "Factory Sanitation" will prove helpful. The latter is valuable in choosing fixtures required for libraries, theatres, hospitals, etc., which are necessary in extensive operations looking to a complete, self-contained community life.

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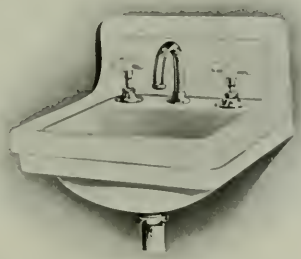

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When an officer said to Elsie Janis at the close of an entertainment in a Y.M.C.A. Hut: "You have kept my men from thinking of tomorrow's battle; they will fight better because of tonight," he expressed the big, underlying purpose of the Y.M.C.A. work. In other words, the

Y.M.C.A. is Helping Win the War

The Y M.C.A. of wartime is vastly different from the Y.M.C.A. as most people know it. Its work has assumed tremendous proportions and achieved tremendous results. It is supplying a vital need—one that is not supplied in any other way. Its work is as important as that of any other organization which the war has developed.

Those of us who are bearing the lighter part of this great war burden must realize that it is not enough to raise and train an army. It is not enough to feed and clothe our men. It is not enough to care for those who are wounded. Soldiers are people, not machines. They must be kept mentally fit to make them efficient.

2,500,000 letters are written every day on "Y" Stationery

It has been demonstrated—is being demonstrated all the time—that the nation gives freely for the building of ships, for the manufacture of munitions, for the housing, clothing and feeding of our fighting men and for providing medical aid to those who are wounded. It will give just as freely when it understands that without the games, shows, stores, reading, educational courses and home comforts which the "Y" provides, all this other giving will be futile.

Consider yourself in relation to your own work. Suppose you were taken from your job, removed to another town and put to work. Suppose at the end of each day's work you ate your supper, went to bed, got up in the morning, had your breakfast, went to work and kept this up for weeks and months—nowhere to go in your idle time; nothing to do; no friends who cared about you. How long could you keep it up? How long could you do your work? That would be the soldier's life without the "Y."

Somebody said, "beware of the army that sings." Armies do not sing in response to orders. They do not sing because of the joy of fighting. They sing because their spirits are high, because they are mentally, morally and physically fit; and it is this condition of mind and body, this building up and maintaining of the morale of our men, which is the deciding factor between a victorious and a defeated army.

Everything is free in the front line canteens

Seven allied activities, all endorsed by the Government are combined in the United War Work Campaign, with the budgets distributed as follows: Young Men's Christian Association, $100,000,000; Y. W. C. A., $15,000,000; National Catholic War Council (including the work of the Knights of Columbus and special war activities for women), $30,000,000; Jewish Welfare Board, $3,500,000; American Library Association, $3,500,000; War Camp Community Service, $15,000,000; Salvation Army, $3,500,000.

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Bay State Brick and Cement Coating, manufactured by Wadsworth, Howland & Co., Inc., Boston, Mass. Hambly & Sons, agents for San Francisco and Los Angeles.

Mauerene Likwid Sement, sold by the Imperial Company, Monadnock Bldg., San Francisco.

Armorite, sold by W. P. Fuller & Co., all principal Coast cities.

Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.

Paraffine Paint Co., 34 First St., San Francisco.

Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.

CEMENT FLOOR COATING

Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS

Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS

Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL

Haslett Warehouse Co., 310 California St., San Francisco.

COLD STORAGE PLANTS

T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
Vulcan Iron Works, San Francisco.
H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS

United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.

CONCRETE CONSTRUCTION

Clinton Construction Co., 140 Townsend street, San Francisco.
K. E. Parker, 251 Kearny St., San Francisco.
Barrett & Hilp, Sharon Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.

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Master Builders Method, represented in San Francisco by C. Roman, Sharon Bldg.

CONCRETE MIXERS

Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.

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United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.

Twisted Bars. Sold by Woods, Huddart & Gunn, 444 Market St., San Francisco.

Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.

Pacific Coast Steel Company, Rialto Bldg., San Francisco.

Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.

Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., Underwood Bldg., San Francisco.

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"Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL

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Barrett & Hilp, Sharon Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Houghton Construction Co., Flatiron Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 725 Chronicle Bldg., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
L. G. Bergren & Son, Call Bldg., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
Grace & Bernieri, Claus Spreckels Bldg., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
Knowles & Mathewson, Call Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
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Grant Gravel Co., Cory Bldg., Fresno, Cal.
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Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.

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Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Mauerene," sold by Imperial Co., Monadnock Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.

DRINKING FOUNTAINS

Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Engineering Co., 683 Howard St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
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FANS AND BLOWERS

John Ringius, 252 Townsend St., San Francisco.

FENCES—WIRE

Pacific Fence Construction Co., 245 Market St., San Francisco.

FIRE ESCAPES

Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE EXTINGUISHERS

Scott Company, 243 Minna St., San Francisco
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

FIREPROOFING AND PARTITIONS

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Mullen Manufacturing Co., 64 Rausch St., San Francisco.
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R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD

Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.

FLUMES

California Corrugated Culvert Co., West Berkeley, Cal.

FURNACES—WARM AIR

Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

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C. F. Weber & Co., 985 Market St., San Francisco.

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Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.
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California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

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California Building Material Co., new Call Bldg., San Francisco.
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Grant Rock & Gravel Co., Cory Bldg., Fresno.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

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Henry Cowell Lime & Cement Co., San Francisco.

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Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
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Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

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Gilley-Schmid Company, 198 Otis St., San Francisco.
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Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
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Vulcan Iron Works, San Francisco.
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Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE

J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS

Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

LANDSCAPE ARCHITECTS

Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.

J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS

MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL

Pacific Building Materials Co., Underwood Bldg., San Francisco.
Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

LIGHT, HEAT AND POWER

Great Western Power Company, Stockton St., San Francisco.

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Roberts Mfg. Co., 663 Mission St., San Francisco.

LIME

Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM

D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
Paraffine Companies, factory in Oakland; office, First St., San Francisco.

LUMBER

Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
California Redwood Association, 216 Pine St., San Francisco.

MAIL CHUTES

American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS

Mangrum & Otter, 827-831 Mission St., San Francisco.

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American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
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Holloway Expanded Metal Company, 517-539 Second St., San Francisco.

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Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS

American Standard Oil Burner Company, Seventh and Cedar Sts., Oakland.
S. T. Johnson Co., 1337 Mission St., San Francisco.
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California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.

Fair Manufacturing Company, 617 Bryant St., San Francisco.

Palm Iron & Bridge Works, Sacramento.

C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.

Schreiber & Sons Co., represented by Western Builders Supply Co., San Francisco.

Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

Sartorius Company, Inc., 15th and Utah Sts., San Francisco.

West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PACKING

Plant, Rubber & Asbestos Works, San Francisco.

PAINT FOR CEMENT

Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.

Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.

Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.

Paraffine Companies, 34 First St., San Francisco.

Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

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I. R. Kissel, 1747 Sacramento St., San Francisco.

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Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.

The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.

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"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

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California Brick Company, Niles, Cal.

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PLUMBING CONTRACTORS

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Gilley-Schmid Company, 198 Otis St., San Francisco.

Scott Co., Inc., 243 Minna St., San Francisco.

Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.

California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.

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Gilley-Schmid Company, 198 Otis St., San Francisco.

Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.

J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.

Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.

Standard Sanitary Mfg. Co., 149 Bluxome St., San Francisco.

Wm. F. Wilson Co., 328 Mason St., San Francisco.

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Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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Aspromet Company, Hobart Bldg., San Francisco.

Bender Roofing Company, Monadnock Bldg., San Francisco.

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United Materials Co., Crossley Bldg., San Francisco.

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Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

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The Paraffine Companies, Inc., 34 First St., San Francisco.

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Aspromet Company, Hobart Bldg., San Francisco.

San Francisco Metal Stamping Works, 2269 Folsom St., San Francisco.

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Cabot's Creosote Stains, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco

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STEEL HEATING BOILERS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.

Ocean Shore Iron Works, 558 Eighth St., San Francisco.

STEEL AND IRON—STRUCTURAL

Central Iron Works, 621 Florida St., San Francisco.

Dyer Bros., 17th and Kansas Sts., San Francisco.

Golden Gate Iron Works, 1541 Howard St., San Francisco.

Mortenson Construction Co., 19th and Indiana Sts., San Francisco.

Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.

Palm Iron & Bridge Works, Sacramento.

U. S. Steel Products Co., Rialto Bldg., San Francisco.

Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

Southern California Iron and Steel Co., Fourth and Mateo Sts., Los Angeles.

Vulcan Iron Works, San Francisco.

Western Iron Works, 141 Beale St., San Francisco.

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Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles; W. B. Kyle, San Francisco representative, Call Bldg.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

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Raymond Granite Company, 1 and 3 Potrero St., San Francisco.

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Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

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San Francisco Metal Stamping Works, 2269 Folsom St., San Francisco.

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The Tormey Co., 681 Geary St., San Francisco.
Keller & Coyle, 233 Grant Ave., San Francisco.

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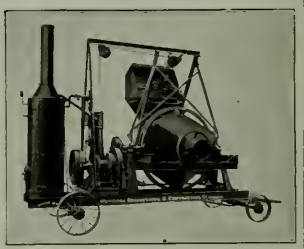

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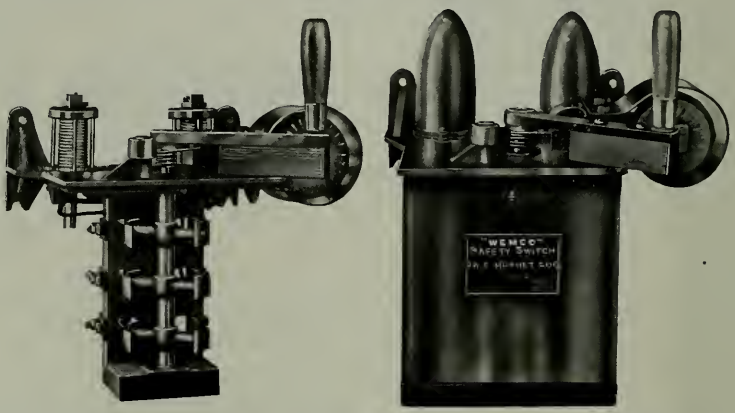

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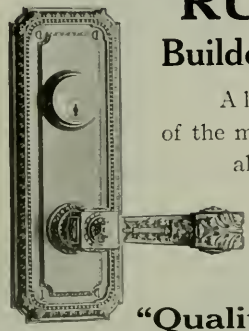

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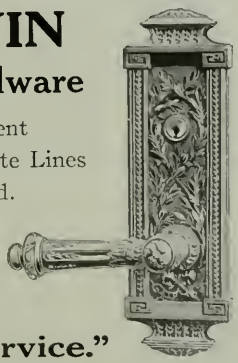

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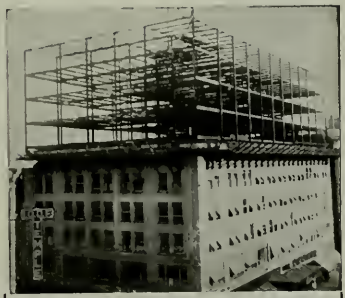

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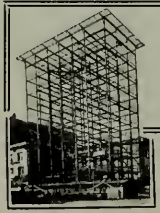

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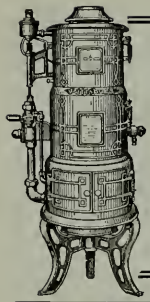

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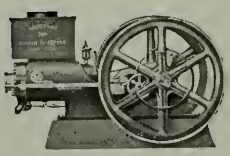

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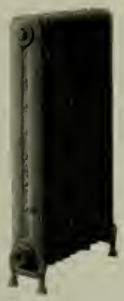

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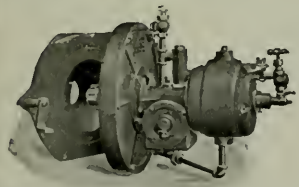

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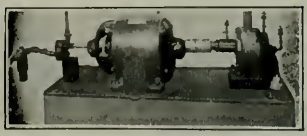

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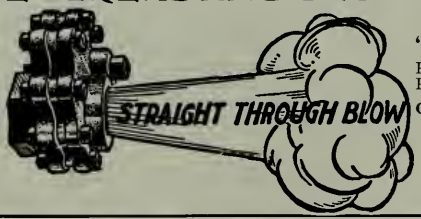

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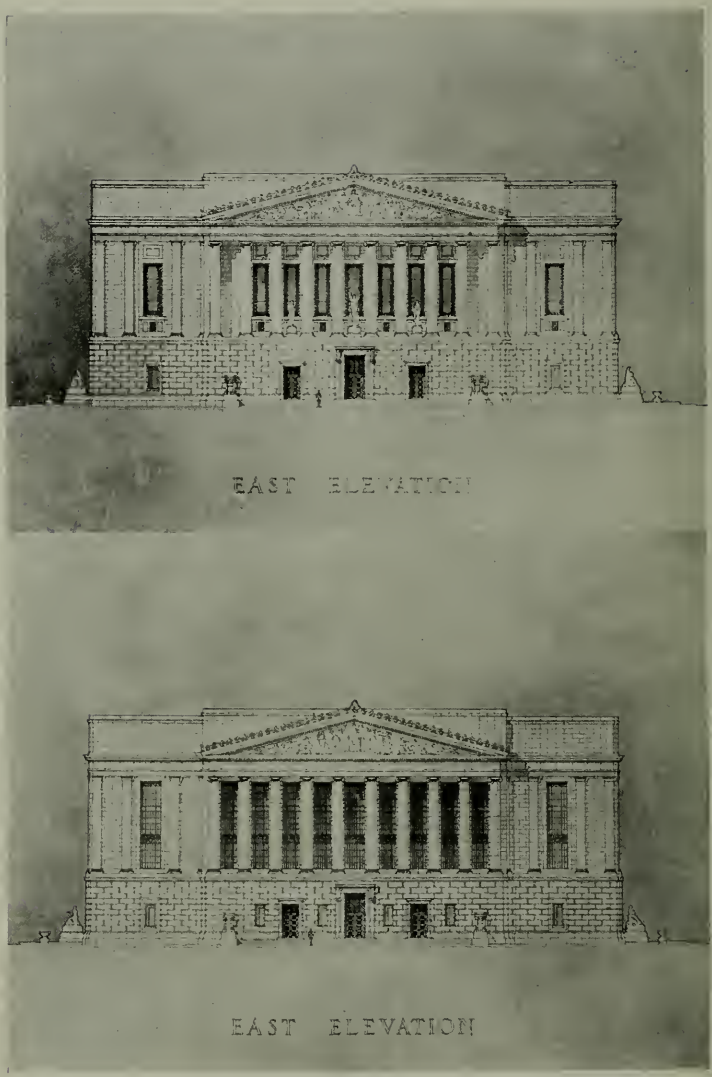

LIBRARY (UPPER FACADE) AND OFFICE BUILDING (LOWER) WINNING DESIGNS IN THE SACRAMENTO STATE BUILDINGS COMPETITION
WEEKS & DAY, ARCHITECTS

THE
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OCTOBER, 1918 Vol. LV. No. 1.

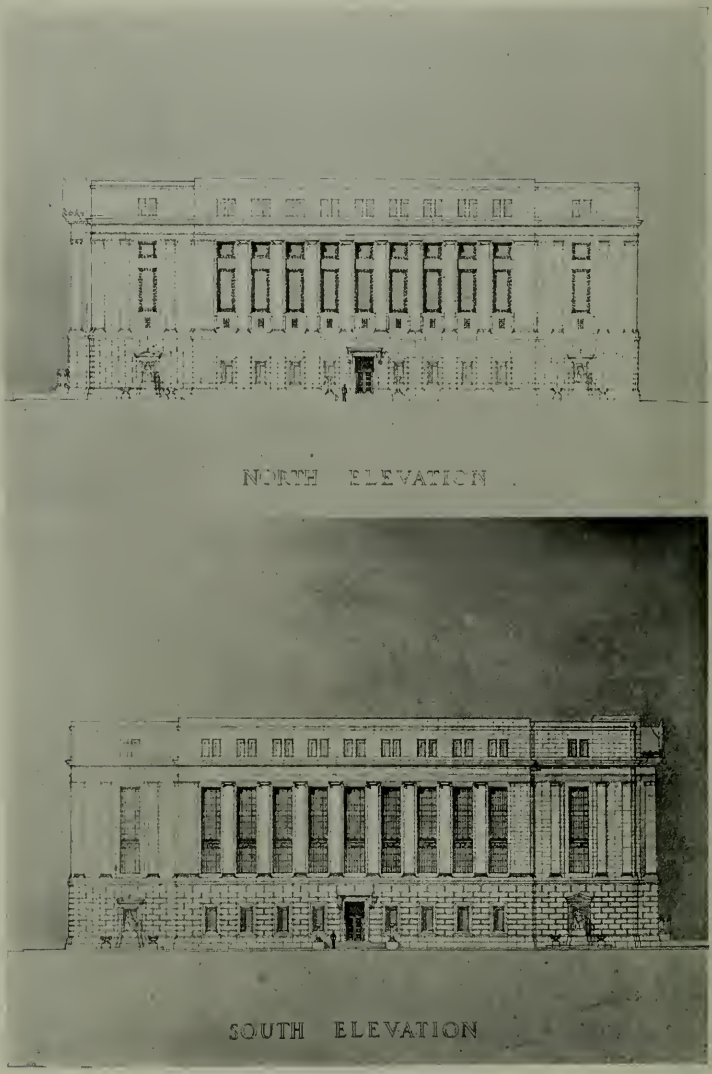
The Sacramento State Buildings Competition

By WILLIAM C. HAYS, A. I. A.

FICTION and "happy endings" seem to be inseparably associated. However, in real life, too, "happy endings" have been known. Whether or not the lot of the architect may in war-times be called "real life" is a matter of opinion, but an architectural competition for the State Library, Courts and Office Buildings at Sacramento, California, has just been brought to a happy ending and this fact is worthy of notice. By sad experience, and "out of great tribulation," we have learned that this is not always the case in California—or, at least, on the north side of the Tehachapi.

Some days have already gone by since Mr. Chas. Peter Weeks, or rather the firm of Weeks & Day, was announced as winner of this great competition, involving much distinction and a substantial fee,—yet the writer has heard nothing but congratulations as to the outcome. There could have been no uncertainty in the minds of the jurymen; the winners won easily. Their general plan is excellent, the buildings nicely related to each other across the intervening spaces, while the composition toward the Capitol is admirable. As an architectural abstraction, the composition of the Capitol and the facades of the new buildings on M street had to be well studied, but the main entrances on Tenth street are in the only logical places, while adequate secondary circulation is carried through both buildings. Some moving of trees will be necessary, but this is a matter of every day experience to the landscape men.

The Library plan is essentially that of the Cleveland, Ohio, building, but has better lighting for the delivery room. It is logical in the placing and proportioning of the great rooms, and of the secondary groups, except that the cataloguing force is too remote from the public catalogue. There is, by the way, a discrepancy between the elevation and section in the relation of the California room window heads and the Art Gal-



LIBRARY (UPPER) AND OFFICE BUILDING (LOWER), WINNING DESIGNS IN SACRAMENTO STATE BUILDINGS COMPETITION
WEEKS & DAY, ARCHITECTS

lery floor, that will involve re-study. The Court plan of this building, while good, leaves something to be desired. The Supreme Court Chamber is well placed, but the approach lacks that dignity befitting the Sovereign Judiciary of the State. There is not enough distance (for here is one case in which distance is demanded) between the arrival landing of stairs or elevators and the portal, and the ceiling of the space outside the Court Chamber is too low to be impressive. While the public and court circulations are properly separated, there are no secondary entrances. The District Court of Appeals might be better placed, since it is virtually in constant use, as against the few days per year of the Supreme Court's sessions. All of the internal "detail" planning shows thought and skill.

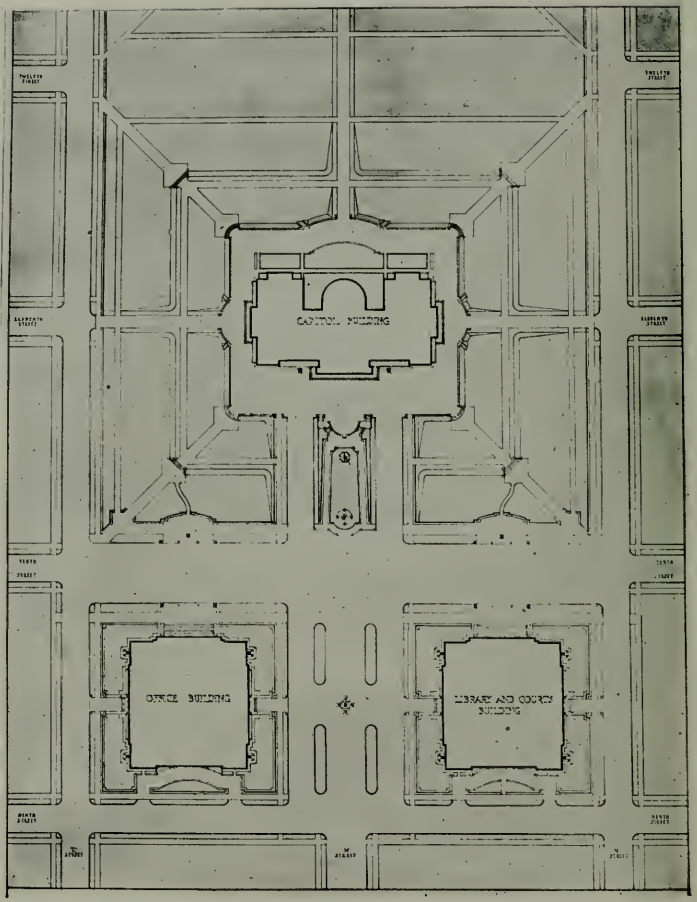
Messrs. Weeks & Day's design for the Office Building has a unique feature in its rotunda and broad cross circulation. This seems to have a three-fold purpose: it secures isolation of departments; it distinguishes this building from the purely commercial types, in that it has some monumental quality; also it offers breathing spaces on the torrid days that make Sacramento infamous. A large area in the upper floors behind the pediment will be hard to light, but it can, presumably, be used for storage.

This competition reflects the scarcity of those high salaried, competition draftsmen—who have been for hire to the highest bidder among the plan-brokers. Many of these draftsmen, being "in the service," are not available. Principals have had to take a more active part—and here the creative mind of the architect came into its own as against the merely executive mind that marks the "captain of industry" intruded into architecture. The head of the firm might not say to a "special" designer, on the last day of the charette—"if you will put some ink into a twirler, and set the point on the centre, I think I could draw the ball on the flagpole."

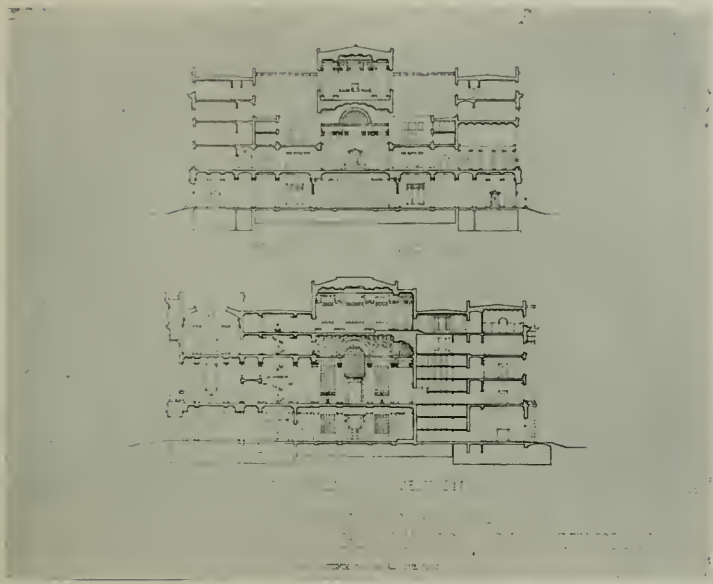
It is not surprising, then, to find that the facade of greatest distinction in this competition is that by Dennison & Hirons. Ever since the phenomenal competition winnings of a then prominent firm, about at the turn of the century, many of us knew that a young man named Hirons was no negligible factor in those successes. Later we saw him win his European scholarship, go abroad, travel, and enter l'Ecole des Beaux-Arts. In that Atelier Laloux which has, indirectly, meant so much of what is good in American architecture, we knew of his earning distinction; and we saw how he intuitively made his own that which, in the school's training, it is wholesome for—not a FRENCH architect, but an AMERICAN architect, to know. With this exquisite facade for the Library and Courts building, Mr. Hirons has justified his early promise and his later training, but the plans are a distinct disappointment.

Any study of the other plans is under difficulties, because of the inadequate photographs. With one exception the second floor plans were the "main" floor's and were given the most study by the competitors. The second floors should have been shown in preference to the first. As a whole, however, the remaining plans are far from satisfying. Few of them have much semblance of composition, although some show ingenuity—ingenuity which, apart from other and sounder qualities, is not usually a virtue, but rather, the camouflaging of faults. Several of the facades are, either in whole or in part, badly proportioned, while with others the lines of the Capitol were safely disregarded.

The program having indicated, though not demanded, that the Art Gallery should have "top light" (and common sense being in accord with



PLOT PLAN, WINNING DESIGN,
SACRAMENTO STATE BUILDINGS COMPETITION
WEEKS & DAY, ARCHITECTS

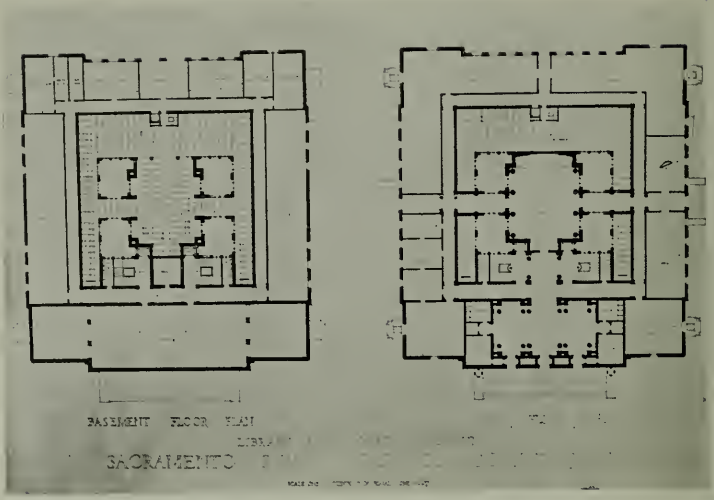


SECTIONS, LIBRARY AND COURTS BUILDING
Weeks & Day, Architects

the programme) Mr. Scherrer put his Gallery in the basement, balancing the California Room, both otherwise well placed, if it is intended that they should have no central, but only local supervision. The Library plan, as a whole, seems to be prettier than it is practical. The facade of this Library and Courts building is a straight-forward interpretation of the plan more than most of the others, and it has a charm that is totally lacking in the same designer's Office Building.

Of the Library and Courts building, the design by Bliss & Faville alone—other than the winner—is intelligible from the single plan that has been photographed—for it groups everything on the first floor. The scheme is more ingenious than reasonable and the balancing of a multi-storied, dark book stack, with a one-story, brilliantly lighted Art Gallery, is highly illogical—while the square form shown is undesirable for Art Gallery purposes. The California room is impressive in its main proportion of length to width, though it is inconceivably bad in fenestration, balance and axes.

The main reading room, although well-proportioned and studied, is relegated to a back street, and has full southern lighting, the poorest for reading room purposes. There is little integrity of relation between plan and elevation. The facade has a new-born motif—the super-attic, nearly 30 feet high, the heads of the topmost windows being, in fact, barely above the mid-height of the outer wall. Excepting this excessive attic, however, much is to be said in favor of this facade as composition. The designers made little of the program requirement as to relation with the Capitol, a point which, contrary to conditions in the San Francisco Civic Center, was, in this case, far fetched. A high



WINNING PLAN, SACRAMENTO STATE BUILDINGS COMPETITION
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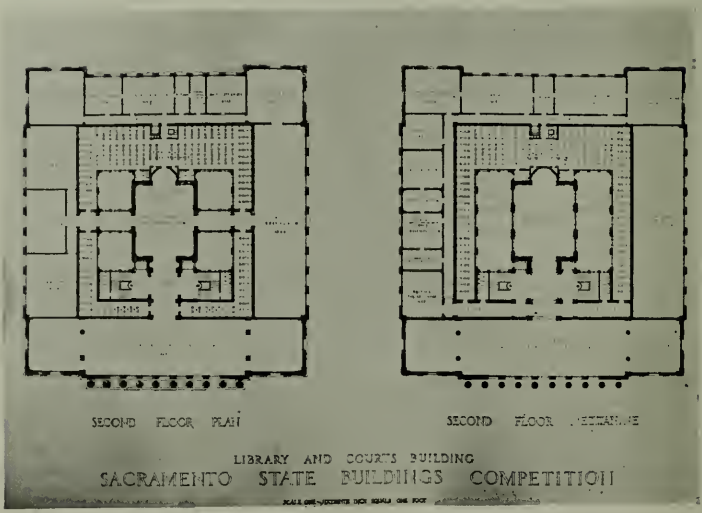

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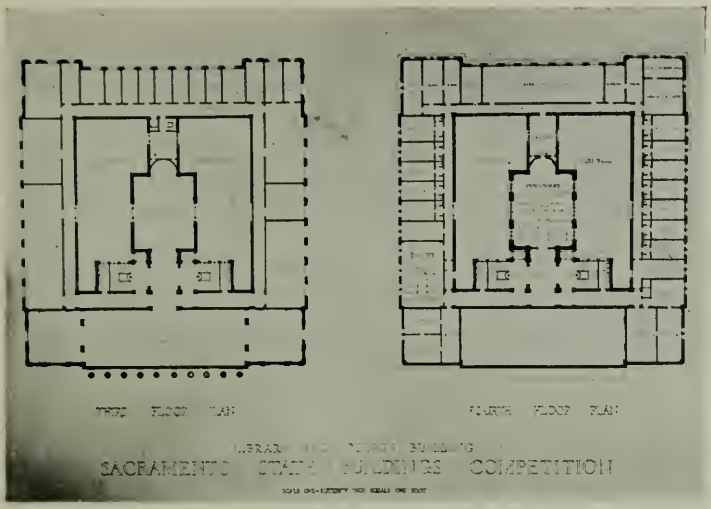

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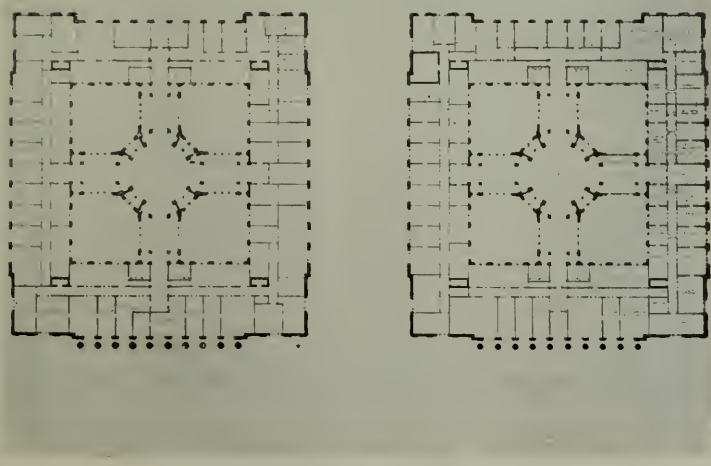

WINNING PLAN, SACRAMENTO STATE BUILDINGS COMPETITION
Weeks & Day, Architects

SACRAMENTO STATE BUILDINGS COMPETITION
FRONT ELEVATION OF THE LIBRARY AND COURTS BUILDING
SCALE ONE SIXTEENTH INCH EQUALS ONE FOOT

LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
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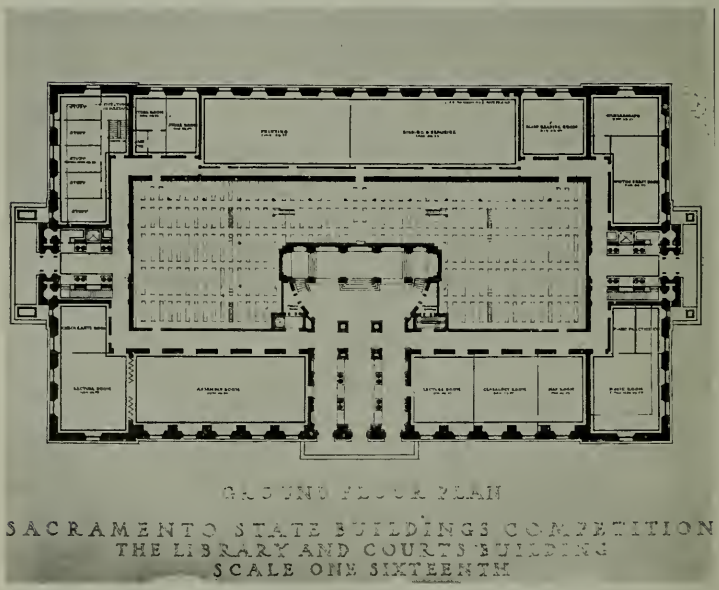

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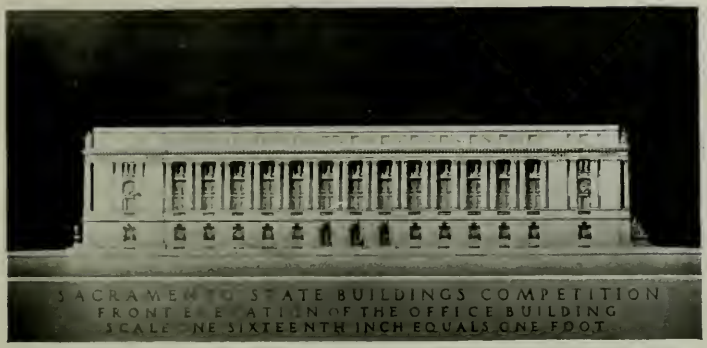
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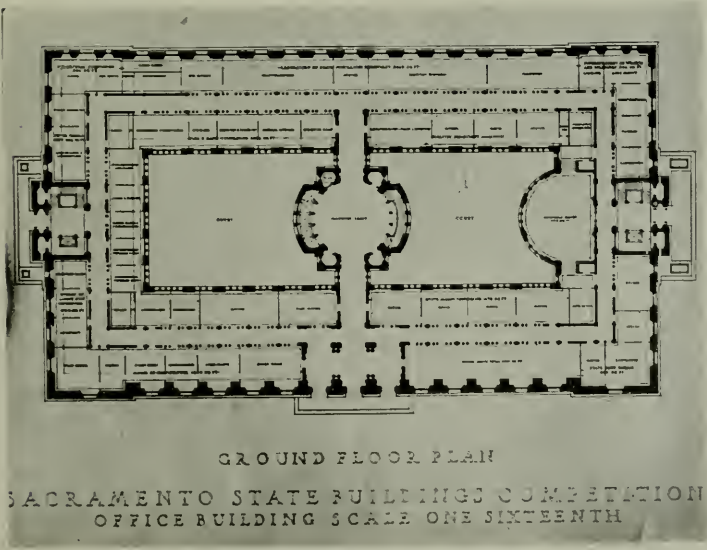

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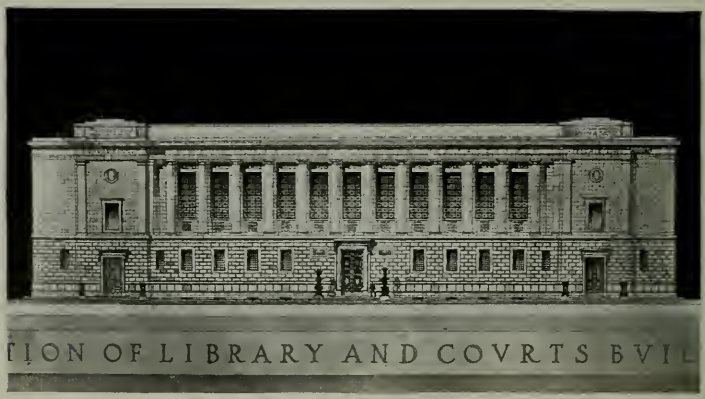
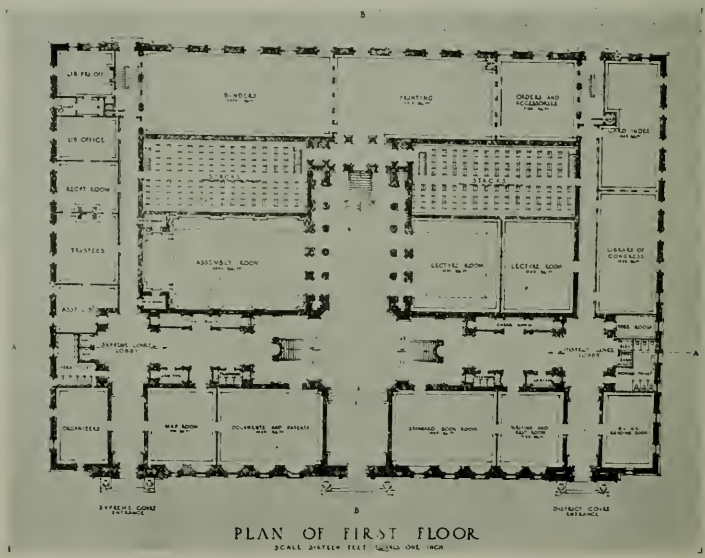


LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Dennison & Hirons, Architects



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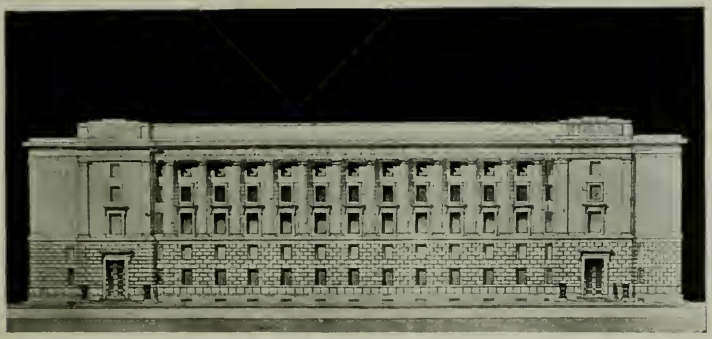
Dennison & Hirons, Architects



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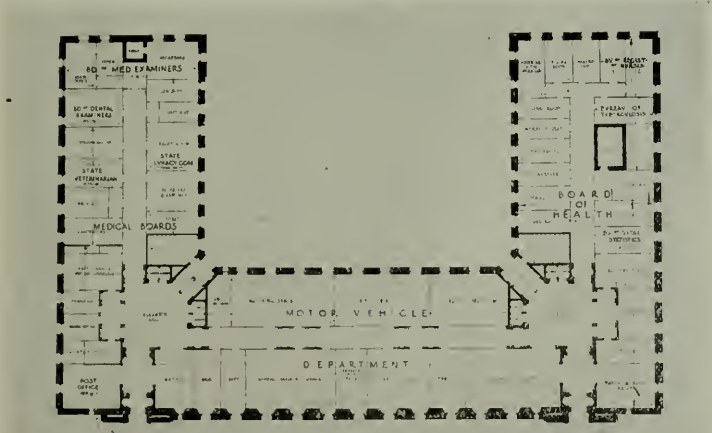
Dennison & Hirons, Architects



PLAN OF FIRST FLOOR

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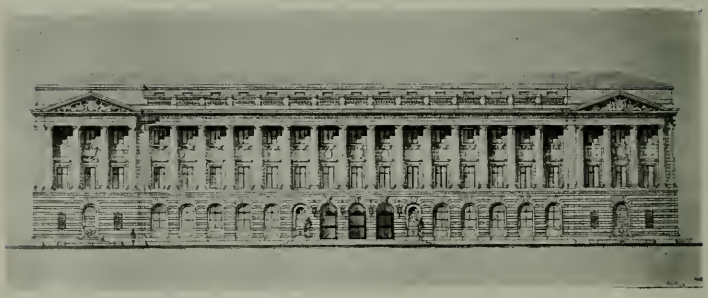
Dennison & Hirons, Architects



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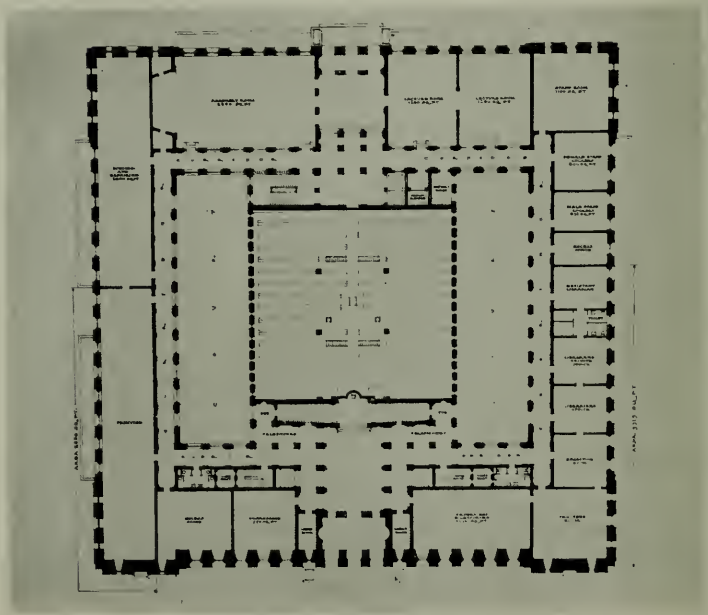
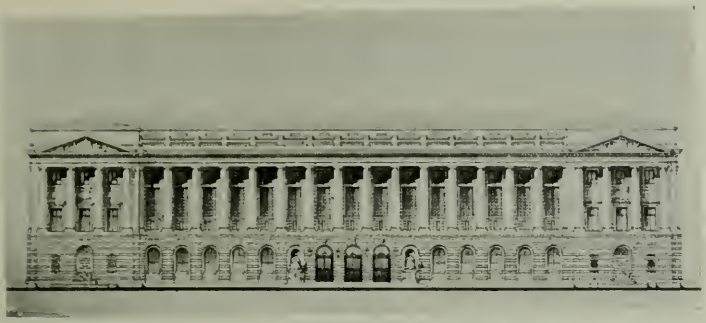
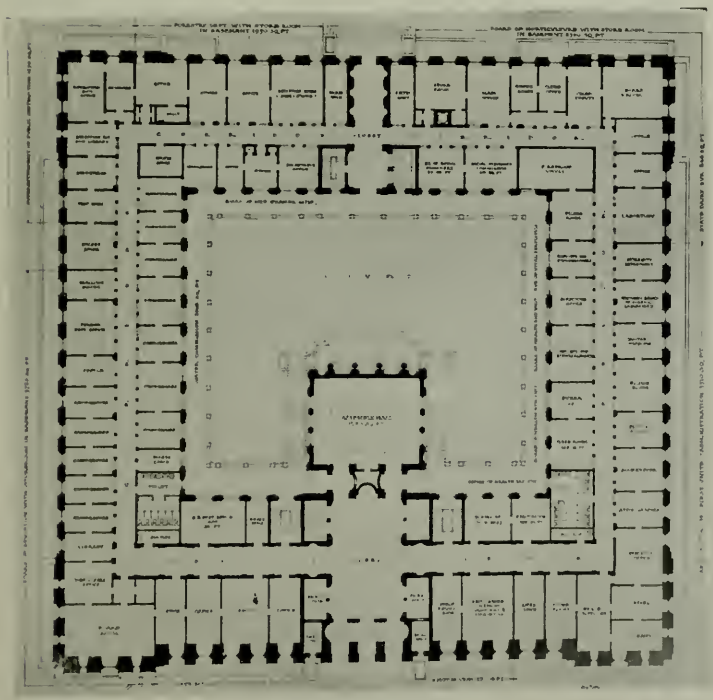


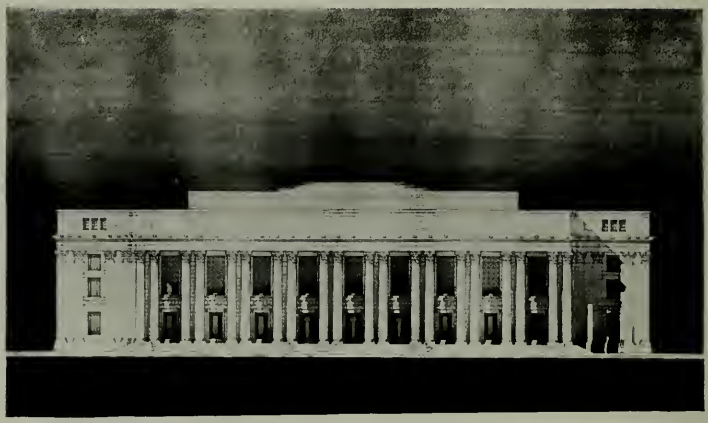
FIRST FLOOR PLAN, LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
James Gamble Rogers, Architect



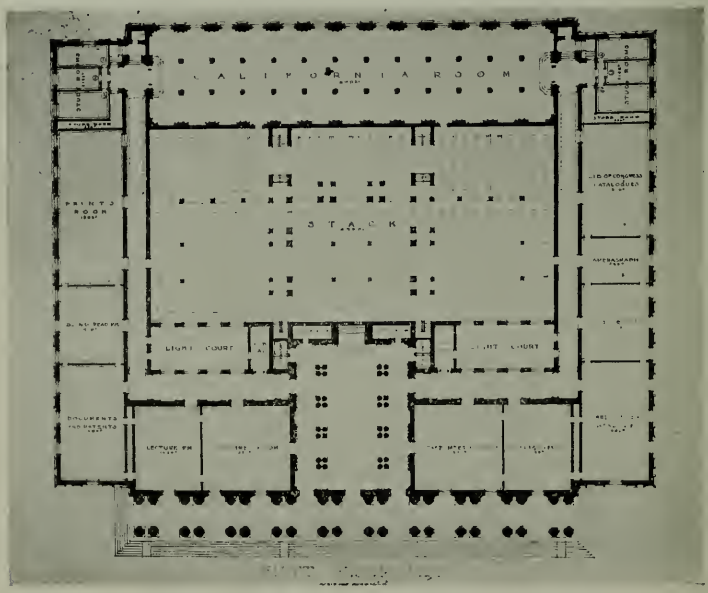
OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
James Gamble Rogers, Architect



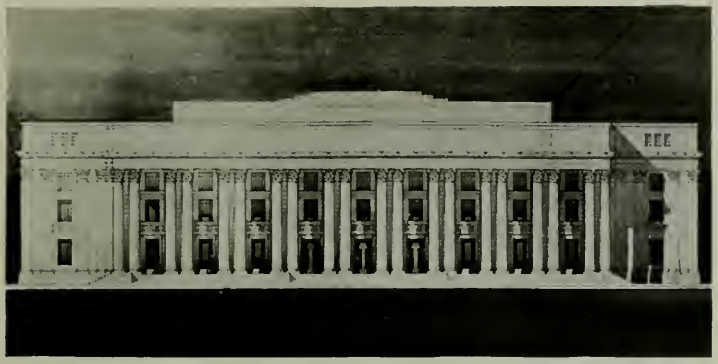
FIRST FLOOR PLAN OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
James Gamble Rogers, Architect



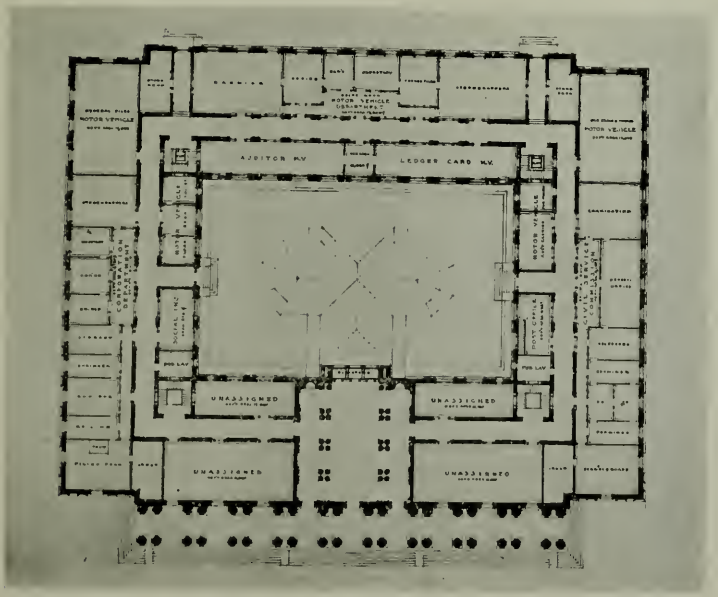
LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Ward & Blohme, Architects



LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Ward & Blohme, Architects

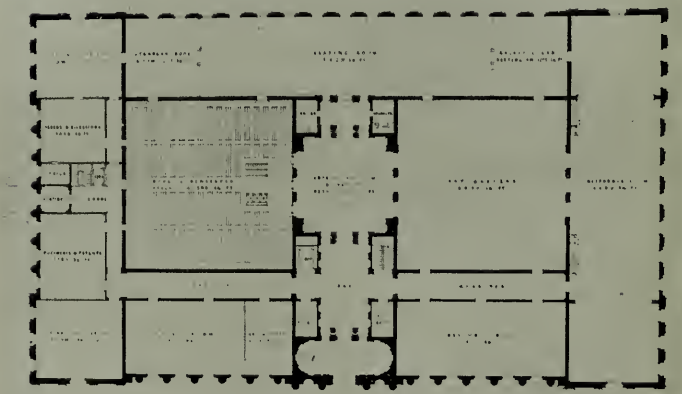


OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Ward & Blohme, Architects



FIRST FLOOR PLAN, OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Ward & Blohme, Architects

LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Bliss & Faville, Architects



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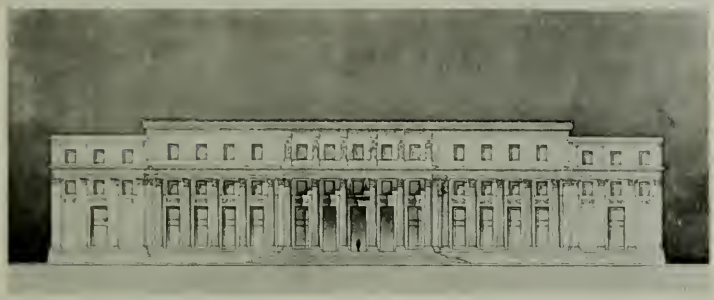
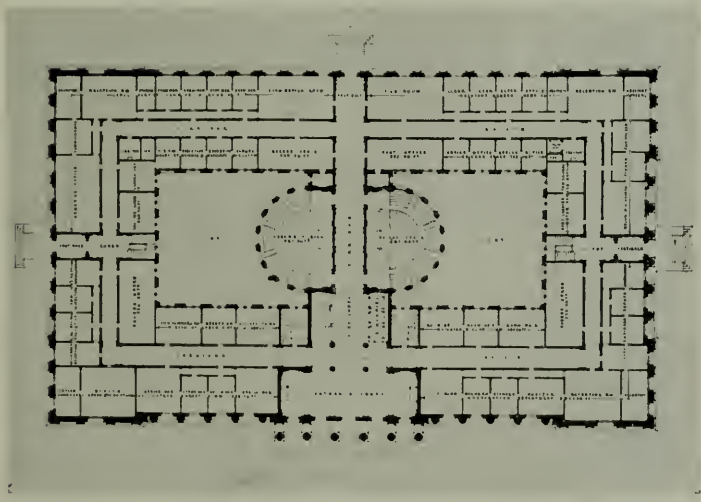
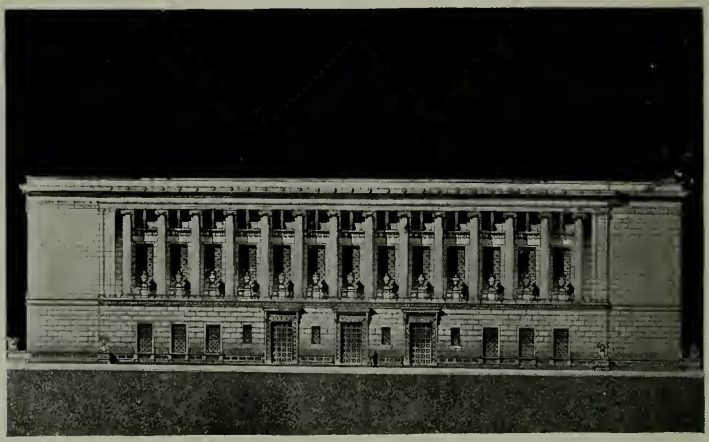
Bliss & Faville, Architects



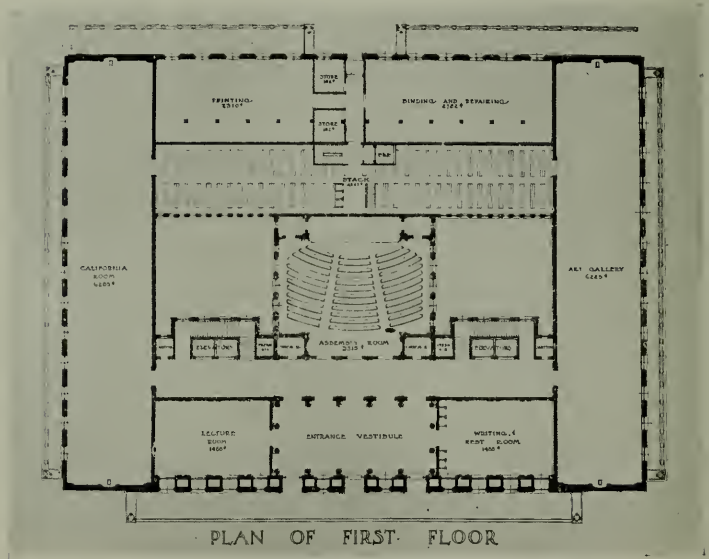
OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Bliss & Faville, Architects



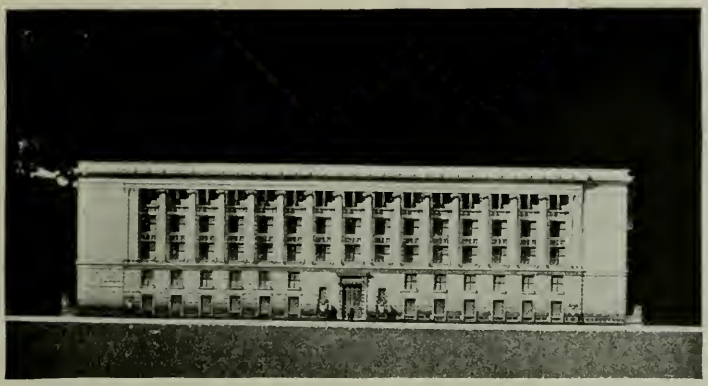
FIRST FLOOR PLAN, OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Bliss & Faville, Architects



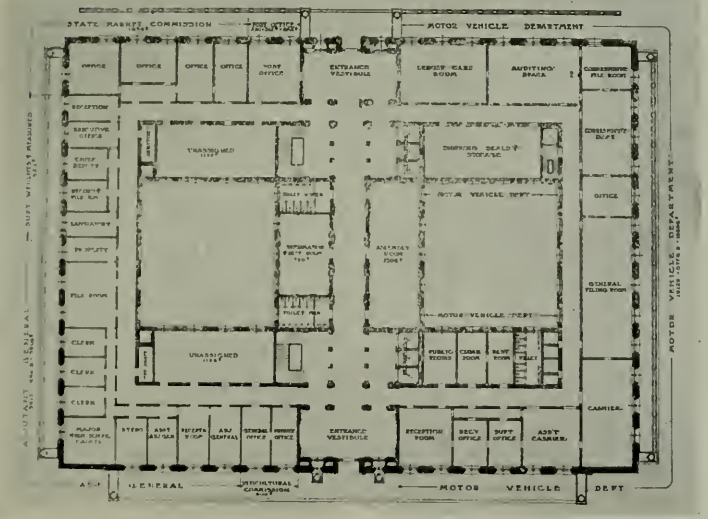
LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Adolf Scherrer, Architect



LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Adolf Scherrer, Architect

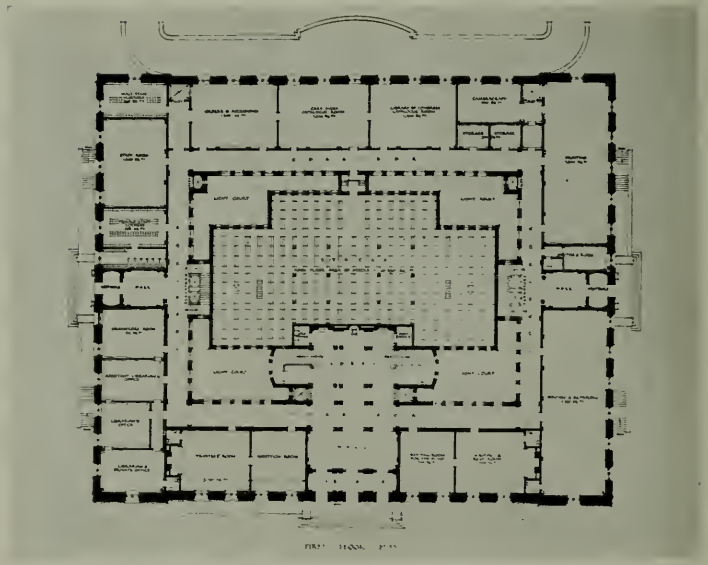


OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Adolf Scherrer, Architect



OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Adolf Scherrer, Architect

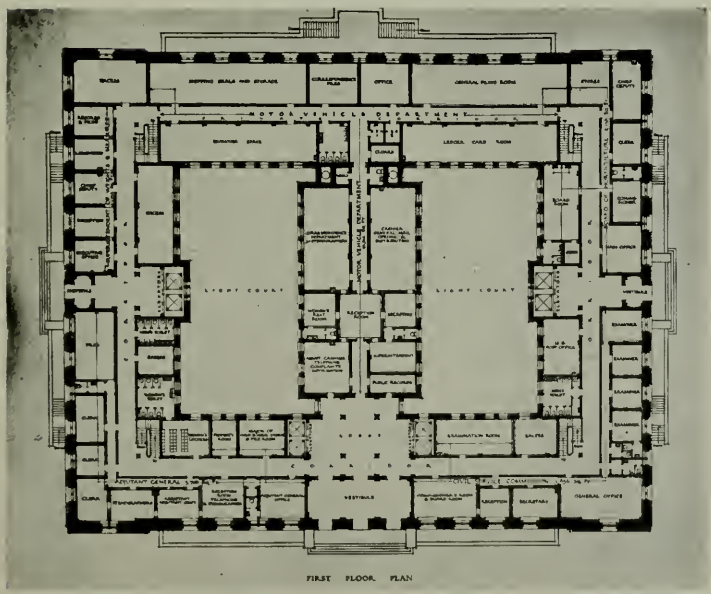
LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Hewitt, Ash & Curtis, Architects



LIBRARY, SACRAMENTO STATE BUILDINGS COMPETITION
Hewitt, Ash & Curtis, Architects

FRONT ELEVATION OF OFFICE BUILDING

OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Hewitt, Ash & Curtis, Architects



FIRST FLOOR PLAN

OFFICE BUILDING, SACRAMENTO STATE BUILDINGS COMPETITION
Hewitt, Ash & Curtis, Architects

colonnade rising from near the ground is inevitably noble as a parti, and this one is very well studied. The entrance motif is handsome and dignified. In their Office building plan, the balancing of the "assembly room" by an exact duplicate marked "excess space" is unwarranted.

Mr. Rogers' plans are interesting, especially that for the Office building, and he seems to have been the only competitor, besides the winners, to have grasped something of the specific semi-monumental character of this building. Here the suggestion of a terrace or promenade in the open court is promising, though it would be hard to carry out. But these plans are behind just another thread-bare repetition of the defenseless old Garde Meuble of Paris (for poor Gabriel, along with the designer of the Strozzi lantern, is dead and cannot protest). This one is better done than most of the—shall we say?—variations.

After taking out the winner, and looking at the other designs as a whole, the standard is distinctly disappointing, in view of the size of the project and the generally stagnant situation in architects' offices. The quality (or lack of it) in some of these "final" designs might be accounted for, perhaps, if the laymen on the jury outvoted, as they outnumbered, the architects—an improbable situation. Otherwise one must conclude that, having qualified in the preliminaries, the competitors—like that miraculous crab mentioned by Hamlet to Polonius—"could go backward."

* * *

The word "outcome" has been used at the beginning of these notes advisedly, as in several other phases of the matter, there has been seemingly well warranted criticism, which, starting as some of it did outside the State of California, may not be put down discreditably against local feeling.

Adverse comments have been of certain flaws in the Institute Code, of the "form" of competition, as well as of various program details and general administration.

This was a "two stage" competition with ostensible "preliminary" and "final" stages. Actually, the "preliminary" nature of the first stage was a farce—with such tragic results, from the economic standpoint, that architects, as a class, must appear to intelligent laymen to be fit subjects for immediate investigation, either by alienists on behalf of the Lunacy Commission or by the Board of Charities—both of which State bodies, by the way, are to be housed in one of the new buildings.

In effect the competitors, (sixty-four of them we are told from Sacramento—by men who should "admit" and not rejoice in it) were by those same "authorities" caused to spend not less than fifty or sixty thousand dollars, where three-fourths of that waste could, and should, have been avoided.

The "Code" of the American Institute of Architects recognizes both "open" and "limited" competitions, but DEPRECATES the former. It also provides for two classes of "limited competitions," in one type of which (b) the participants are chosen "from among architects who make application accompanied by evidence of their education and experience." In the "open" form the Code contains a very serious fault in that this "evidence of education and experience" shall be offered by all competitors *after* incurring the expense of the preliminary stage.

The Code, by the way, states that the first stage of an "open" competition is "open to all." Such was not the case here, for it was "closed" to those Americans who could not qualify, under certain restrictions, as well as to all foreigners. In essence, would it have been less "open to all" in the first stage, once *any* limitation is established, if the geographical limitation

had been the State of California, or Modoc County—or if the "training and experience" qualification had been "a previous condition of servitude in the office of Smith, Jones and Black"? Furthermore the Code never, either by word or spirit, countenances such a "preliminary" stage as this one was; on the contrary—explicitly stating that "the competitive drawings are of the slightest nature, involving only the fundamental ideas of the solution."

In this case, the officials, against the urgent representations of the Chapter Committees, insisted on a first stage in which, with the exception that no "sections" were called for (or allowed), there were required complete, "final" scale drawings (even including basement plans) of both buildings, rendered on Whatman paper in India ink and identical with the final stage. The omitted sections, by the way, could easily have been done in *three* or *four days*. But their omission, far from being a help, was a positive handicap to competitors,—a section being quite as essential as either plan or elevation in studying as well as in "setting forth the fundamental ideas of the solution." There was allowed more than *five months*' time for this "preliminary" stage.

That the "preliminary" stage was a mockery at the plain intent of the Code is evident. What then, may the words "least possible" in the Code mean? One may venture a specific suggestion that, in this case, the spirit and the letter of this phrase would have been properly met if there had been required, say, two principal floor plans of the Library and a plan of the Court floor, one elevation, one section (or two) of the Library and Courts building, at 1/16 inch scale and a block plan at 1/50 inch scale; all on white tracing paper, rendered only in sketch form and mounted at the corners or edges. With a time limit of, say, ten days, each set of drawings might be accompanied by an affidavit to the effect that they had been produced personally by the competitor, with no help other than one assistant, who had been regularly and exclusively in the employ of the principal for the continuous period of six months immediately preceding the issuance of the programme. The drawings here described would be full and sufficient for any intelligent juror (and none other is qualified to serve, under any conditions) to make selection. Some worthy scheme might be overlooked? Doubtless—as worthy schemes *were* overlooked, even with the conditions as they existed.

The statement of programme requirements was better, generally, than in the previous San Francisco State Building Competition, although that regarding the Library showed, either inexcusable carelessness, or ignorance of common library terms on the part of those who prepared it. And the Library requirements, as well as the answers to the many questions thereon, pointed to a pre-conceived scheme, withheld from the competitors, who were put in the position of playing a sort of "toss the ring" game, while blindfolded.

In three respects the programme was not quite fair, considering that there were Eastern competitors unfamiliar with local conditions and too far away to visit the site; first it should have been mentioned that M street is not and never can be the main "approach" to the Capitol building; second, the climatic conditions should have been noted, especially the hot summer temperatures, and that freak of Nature—the unbearably stifling north winds, that make the southern and western exposures, with their cooler breezes, the best, while rooms facing on air pockets such as light courts, are at times almost uninhabitable; third, that the subsurface water lies so high that deep excavation is prohibitive in cost.

Another potential fault: the architects in the Jury formed a minority, contrary to the Institute Code, and while the geographical distribution

was wise, in general the method of final choice was fundamentally wrong, as all final selections should have been made by the competitors concerned—*not* by uninformed laymen—even when professionally advised. Furthermore, it was unjust that the making of nominations for the California juror should be by general vote of the local A. I. A. Chapters, whose members have only the indirect interest of a million other citizens of the State; it was no concern of anyone's, save of the avowed competitors. That the Jury, as finally selected, was most excellent and efficient and made an unimpeachable choice among the "finals," has no bearing on the *principles* involved, but only proves that good frequently comes *in spite* of adverse conditions.

The official spokesman, by the way, was not the first, in similar place, to neglect the usual conventions or courtesies of common business. But as yet the sixty-four who submitted drawings in the "preliminary" stage have received notification of nothing whatever; not even of the appointment of a Jury, of the selections for the "final" or of the return of the drawings (except by the Express Company's "charges collect"—on the theory, no doubt, that the competitors, having wasted, some of them, the equivalent of twenty, or more, Liberty Bonds, would not feel this further trifling disbursement in the interest of an impoverished State).

Answers to inquiries on cloudy points of the programme, by the way, should have been serially numbered so that one might be sure of receiving all such communications, and it is known that some did go astray.

And lastly! The State, through its programme, covenants with the competitors for an exhibition of all final drawings. But no notification was sent; the three days "exhibition" was held nowhere within reach of the competitors—and was over before word filtered through of its opening!

* * *

Non-War Construction

The following is furnished by Mr. L. E. W. Pioda of the San Francisco branch of the State Council of Defense, Construction Department:

To all Manufacturers, Jobbers, Distributors, Dealers, and Consumers of Building Materials:

As far back as March 21, 1918, the following resolution was unanimously adopted and given wide publicity by the War Industries Board:

WHEREAS, It has come to the notice of this Board that new industrial corporations are being organized in different sections of the United States for the erection of industrial plants which can not be utilized in the prosecution of the war; and

WHEREAS, Plans are being considered by certain states, counties, cities, and towns for the construction of public buildings and other improvements which will not contribute toward winning the war; and

WHEREAS, The carrying forward of these activities will involve the utilization of labor, materials, and capital urgently required for war purposes: Now, therefore, be it

Resolved, By the War Industries Board, that in the public interest all new undertakings not essential to and not contributing either directly or indirectly toward winning the war, which involve the utilization of labor, material, and capital required in the production, supply, or distribution of direct or indirect war needs will be discouraged, notwithstanding they may be of local importance and of a character which should in normal times meet with every encouragement; and be it further

Resolved, That in fairness to those interested therein notice is hereby given that this board will withhold from such projects priority assistance, without which new construction of the character mentioned will frequently be found impracticable, and that this notice shall be given wide publicity, that all parties interested in such undertakings may be fully apprised of the difficulties and delays to which they will be subjected and embark upon them at their peril.

Since that time the manufacturers of the principal building materials, including paving brick, face brick, common brick, hollow tile, cement and lime, have agreed to co-operate with the War Industries Board in carrying into effect the spirit of the foregoing resolution, and the individual manufacturers have signed and filed with the Priorities Division pledges in writing substantially as follows:

The undersigned hereby pledges itself not to use, nor so far as lies within its power permit to be used, any products of its manufacture now in, or which may hereafter come into, its possession or control, save (*a*) for essential uses as that term has been or may be defined or applied from time to time by the Priorities Division of the War Industries Board, or (*b*) under permits in writing signed by or under authority of such Priorities Division; that it will make no sale or delivery of such products to any customer for resale until such customer has filed with it a similar pledge in writing, and that it will use its utmost endeavor to insure that its products shall be distributed *solely* for essential uses.

Similar pledges are exacted by manufacturers from their customers who purchase for resale.

That all interested in the manufacture and sale of building materials, as well as those interested in building projects of every character, may have a clear definition of or a ready means of ascertaining the uses to which such materials may be put, and be advised of building projects which may be prosecuted during the war with the approval of the War Industries Board, this circular is issued.

Structures, roads, or other construction projects falling within the following classifications are hereby approved, and no permits or licenses will be required therefor:

(1) After having first been cleared and approved by the War Industries Board, those undertaken directly by or under contract with the War Department or the Navy Department of the United States or the United States Shipping Board Emergency Fleet Corporation, the Bureau of Industrial Housing and Transportation of the United States Department of Labor, or the United States Housing Corporation.

(2) Repairs of or extensions to existing buildings involving in the aggregate a cost not exceeding twenty-five hundred dollars ($2,500), *and new construction for farm purposes only involving in the aggregate a cost of not exceeding one thousand dollars.* (Amend. Sept. 26, 1918.)

(3) Roadways, buildings, and other structures undertaken by or under contract with the United States Railroad Administration or a railroad operated by such administration.

(4) Those directly connected with mines producing coal, metals, and ferro-alloy minerals; and *production (but not refining) of mineral oil and of natural gas.* (Amend. Sept. 19, 1918.)

(5) Public highway improvements and street pavements when expressly approved in writing by the United States Highways Council.

No building project not falling within one of the foregoing classes shall be undertaken without a permit in writing issued by or under the authority of the Chief of the Nonwar Construction Section of the Priorities Division of the War Industries Board.

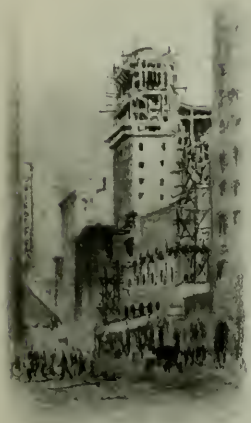
Should one contemplating building conceive his proposed project to be in the public interest or of such essentiality that under existing conditions it should not be deferred, then he will make a full statement of the facts in writing, under oath, and present same to the local representative of the Council of National Defense, applying to such representative for his approval of the proposed construction. Should such local representative approve the construction project, he will promptly transmit the application, stating clearly and fully his reason for approving same, to the Chairman of the State Council of Defense, for his consideration. If approved by the latter, he will transmit it to the Chief of the Nonwar Construction Section of the Priorities Division of the War Industries Board, Washington, D. C., for consideration, if need be, further investigation, and final decision. Should the application be finally approved by the Priorities Division a construction permit will issue which will constitute a warrant to manufacturers and dealers who have taken the pledges of co-operation above mentioned to sell and deliver building materials required in the construction of the licensed building project.

While it is not the policy of the Government to unnecessarily interfere with any legitimate business, industry, or construction project, it must be borne in mind that there is an imperative and constantly increasing demand for labor, material, and capital for the production and distribution of direct and indirect war needs, so satisfy which much nonwar construction must be deferred. A full realization of this fact by all loyal and patriotic citizens, including state and municipal authorities, is all that is required to postpone such construction activities as interfer with the war program. The state and local representatives of the Council of National Defense are with confidence depended upon to fully acquaint the whole people of these United States with the pressing need for the most rigid economy, measured not only in terms of dollars but in terms of labor, materials, and transportation service. The construction projects which must now be deferred may be undertaken when we shall have won the war and will then furnish employment to the returning artisan now on the battle front as well as those who will then be released by strictly war industries.

RESIDENCE OF MR. JULIAN ELTINGE
PIERPONT AND W. S. DAVIS, ARCHITECTS

A Revival of True Andalusian Spanish Architecture

By HENRY F. WITHEY, Architect



SKETCH BY DON WILKINSON

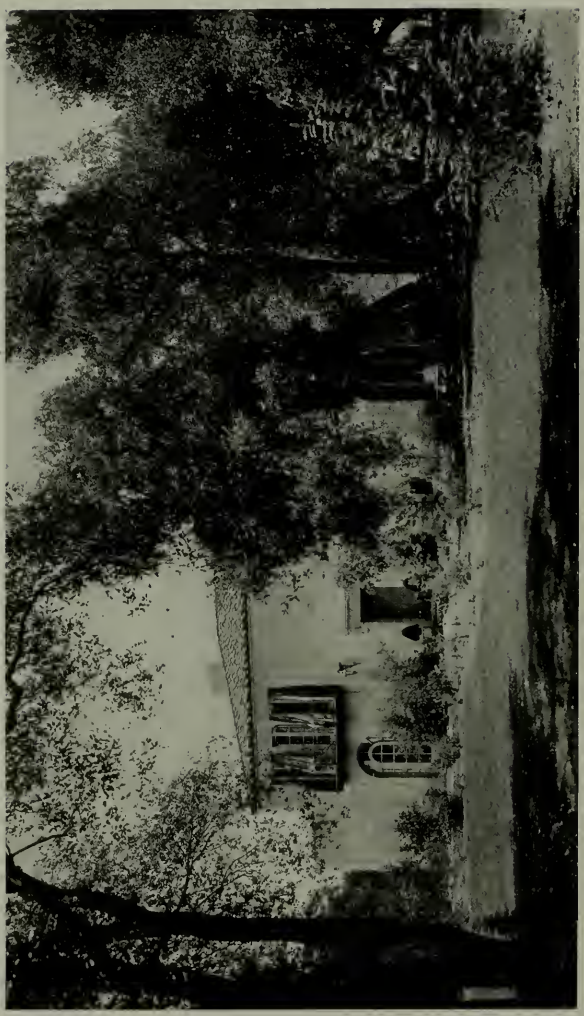
THE accompanying photographs are somewhat illustrative of the work in general submitted for the Architectural Exhibit held recently in the Metropolitan building, Los Angeles. Other exhibits in previous years have shown contemporaneous work of widely varying styles—from Egyptian to Sullivanesque and Swiss chalet to Georgian—not to mention the so-called "Craftsman" type, but the 1918 Exhibition is almost entirely Spanish in character, insofar as it has been possible to obtain the material.

There is, it has often been pointed out, a similarity in many aspects between California and Spain, and it is also noticeable that the architecture of the latter country, with its closely woven atmosphere of romance and picturesqueness of design, seems not so much alien in character, but rather as something particularly belonging, when reproduced in southern California. It might be described as indigenous to the soil, or seeming literally to have its roots on the earth on which it stands. Buildings of a type climatically adaptable, blend harmoniously with the environment afforded by an opulent Nature, and seem perfectly to satisfy one's sense of the fitness of things.

In California, in the early days of its history, the Spanish priests coming as pioneers, built the Missions, embodying in their architecture what they could, albeit in an untrained and elemental way, of the beauty and picturesqueness peculiarly Spanish. Little they dreamed these crudely constructed buildings were destined to be the foundations of the pseudo Spanish Mission style, later to be, in the rapid growth and development of the southwest, widely and promiscuously adopted. Unfortunately, with its adaptability to modern requirements, the style of the Mission structure degenerated into unarchitectural fantasies, crude, often grotesque in type, and stamped with a total lack of appreciation of the spirit of the Spanish Mission architecture.

But its day is already waning. The San Diego Exposition, or to be more exact, that portion of it which was the work of Mr. Bertram Goodhue, seems to have given new life and impetus to the revival of interest in the true Andalusian Spanish. There is an appeal in the atmosphere of refinement so beautifully exemplified in Mr. Goodhue's work, and the solidity of per-

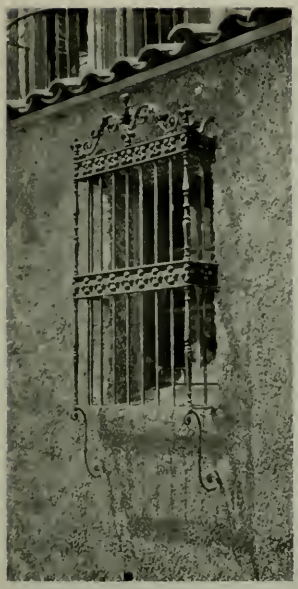
FIRST PRESBYTERIAN CHURCH, MADERA
H. M. Patterson, Architect



HOUSE OF MR. T. R. COFFIN, PASADENA
REGINALD D. JOHNSON, ARCHITECT

GARDEN AND CORRIDOR—CHARLES PLATT, ARCHITECT, NEW YORK CITY, N. Y.

INTERIOR OF CHAPEL OF SAINT MARY-BY-THE-SEA, LA JOLLA, CALIFORNIA
CARLETON MONROE WINSLOW, ARCHITECT



IRON GRILLE Elmer Grey, Architect

manent construction, in contrast to the sham that has heretofore prevailed, has had a far-reaching influence in recent work of Spanish character.

Of the numerous drawings and photographs submitted for this 1918 Exhibition, many are of such high standard of excellence that it has been a difficult task to select a limited number for review in this article, lack of space preventing more extended mention.

The Congregational church at Riverside, designed by Mr. Myron Hunt, and built at about the some time as the San Diego Exposition, is a splendid example of the Spanish school. It gives added attraction to the city of the Glenwood Inn, so widely known and admired.

Since the 1915 Fair Mr. Goodhue has built the Coppel residence in Pasadena and the Slater house at Santa Barbara, both beautiful types of the Spanish Andalusian.

Of more recent construction there are several residences designed by Mr. Reginald Johnson of Pasadena, the most notable of which, and one possessing a wonderful charm of refinement, is the Coffin house at Oak Knoll.

As an excellent adaptation of the Spanish to modern requirements, the house of Mr. Julian Eltinge in Los Angeles, designed by Messrs. Pierpont and Walter S. Davis, is most worthy of favorable comment. Lavish use of color, and richness of texture and materials have given a decidedly old-world atmosphere to the building, the charm of which is further enhanced by the terraces, balconies and towers, from which is afforded a wide and beautiful panorama of lake, valley and mountains.

The State Bank building of Santa Barbara, sketches of which were prepared by Mr. Myron Hunt, have attracted considerable attention. The structure as pro-

GATEWAY TO BELLA VISTA TERRACE Irving Gill, Architect

SKETCH OF ENTRANCE, HOUSE FOR MRS. J. W. BURNS, PASADENA
Elmer Grey, Architect

SOUTHWEST MUSEUM, FROM PATIO OF CASA DE ADOBE

GRAMMAR SCHOOL, LA CANADA, CALIFORNIA
ALLISON & ALLISON, ARCHITECTS

CASA DE ADOBE, SYCAMORE PARK, CALIFORNIA

RESIDENCE OF MR. H. M. WHITELEY, MARIN COUNTY, CALIFORNIA
Hudson & Munsell, Architects

BIRD FOUNTAIN IN GARDEN
RESIDENCE OF MR. W. J. DODD
W. J. Dodd, Architect

PATIO FROM SECOND STORY ARCADE, PALOMAR
APARTMENTS, SAN DIEGO
Mead & Requa, Architects

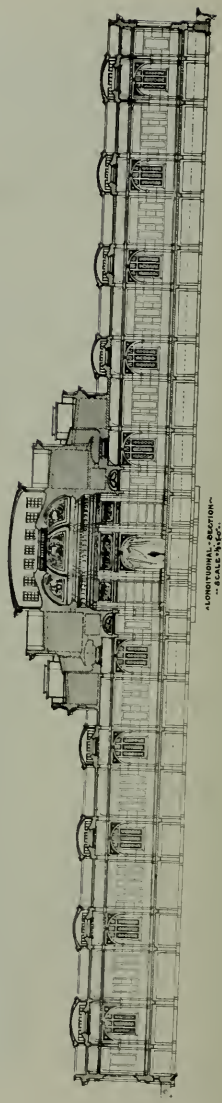
FRONT ENTRANCE, RESIDENCE OF MR. JESSE L. LASKY
Arthur R. Kelly, Architect

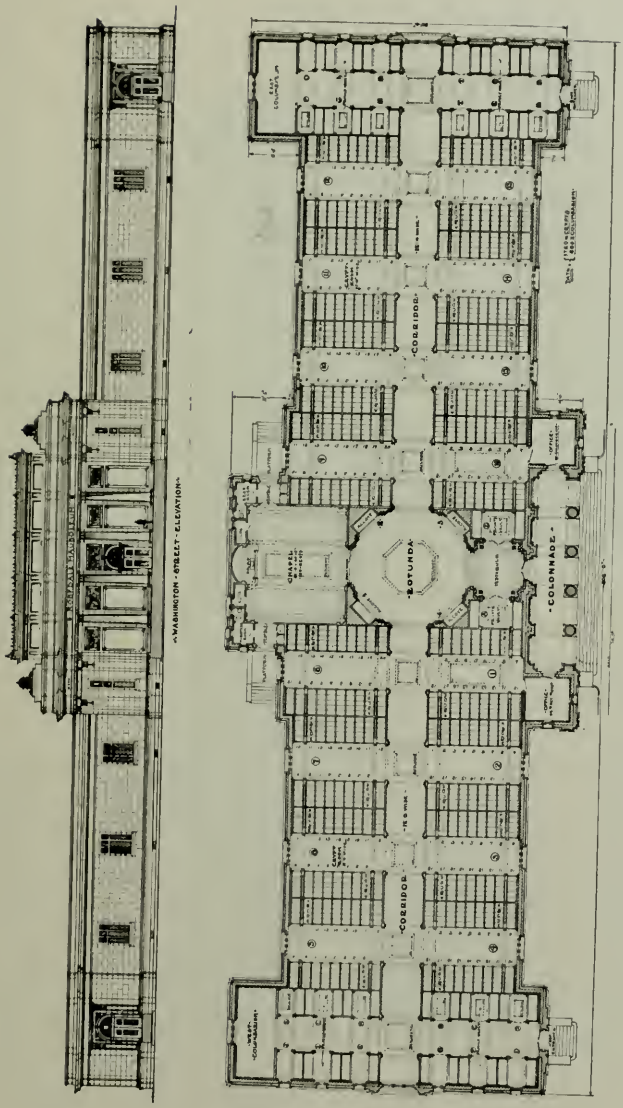
DESIGN FOR CEMETERY BUILDING
Hunt & Burns, Architects

A FIREPLACE.
IRVING J. GILL,
ARCHITECT.

STUDIO OF
MR. GEORGE
REYNOLDS,
DECORATOR.

ROSEDALE MAUSOLEUM
Lyman Farwell, Architect





ELEVATION AND PLAN, ROSEDALE MAUSOLEUM
Lyman Farwell, Architect

SKETCH FOR LEACH MOTOR CAR BUILDING
Arthur S. Heineman, Architect

posed is unique and clearly distinctive, and will give added charm to that delightful Mission city, and be forever a joy to the connoisseurs of art. From its earliest days Santa Barbara has possessed an atmosphere all its own, and though for a time there was danger of this being submerged by a cold-hearted commercialism, there has been a recent effort by the people, which seems likely to succeed, to bring back to the city its original heritage.

May we not hope the era for a revival of Spanish architecture has begun; that it will be of long duration, and that the quality of design will never be less than the examples already set before us.

GRAUMAN'S THEATRE, LOS ANGELES
A .C. Martin, Architect

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Second Largest Shipyard in U. S. Being Built in San Francisco

IT is not generallly known that the big Liberty shipbuilding plant, under construction in Alameda, is to be the second largest in the United States, and when completed will give employment to 30,000 men. No wonder the Bay cities are worrying about sufficient housing facilities.

Construction of the plant is in charge of the Aberthaw Construction Company of Boston, which recently completed the Victory plant at Squantum in record time and which has handled practically all the wartime expansion of the Bethlehem Corporation, totalling more than $20,000,000 exclusive of the present work.

The Alameda plant will be exceeded in size only by Hog Island. It will have ten slips, will cover over one-third square mile and from 3,000,000 to 4,000,000 cubic yards of dredging will be necessary. Large cargo vessels will be constructed, contracts for which have already been awarded to the Bethlehem Shipbuilding Corporation by the United States Shipping Board.

It is anticipated that the construction work will require the services of approximately 15,000 men within the next few weeks.

American Architecture

By ARTHUR H. HELDER, Landscape Architect, Kansas City, Mo.

OWING to the comparative newness of America and the immaturity of American ideas creative of a commendable and idealistic architecture, appropriate to American environment, the establishment of a national style which may be considered as distinctly American is very much in embryo. The influences of sentiment and practice which have greatly affected the moulding of a traditional style in architectural building in the countries of Europe have never been afforded any degree of dominant influence among the American people as a distinct race or nationality.

One reason for this lies in the fact that the American commonwealth has drawn from every nation a representative influx into the social and national life of the country. As a result of this there has not been sufficient influence brought to bear upon any particular idealism of the nationalities so represented to completely affect the American thought nor have the American people as a whole been able so far to rise above the apparent effects of this foreign influence so as to assert an individual and distinctly characteristic style appropriable to American thought and American ideas.

The development of American architecture is in direct ratio to the development of the American people and as long as the people continue to be influenced by foreign idealisms the architecture will portray certain characteristic embodiments of foreign extraction. The traditional ideas of our foreign immigration having much to do with exerting an influence in the moulding and fashioning of the American mind, the idea, custom and practice emanating by reason of this influence put into practice, result in the American people evidencing this foreign influence in their study and practice of the arts as well as in their modes of living. Thus we find the American nation made up here and there of a segregation of representative nationalities living in vain attempt towards some one idealism; formulating a new and puissant nation in the main but on the other hand checking and retarding the higher development of an artistic and cultural individualism in the practice of American arts.

The architecture of the European nations has risen from the fragments of a pre-Renaissance which have carried through the dark ages enough of the traditional feeling of the people to resuscitate the life of a national style and fan the smouldering embers of an ancestral conception until it has burst into a living flame and burns with the light of a more modern type of national architecture peculiar to the needs, requirements and tastes of those people, thus appropriating the revival of its past traditional tendencies. Likewise the American has attempted to seek a revision of some preadopted architectural style distinguishable for its feeling of artistic proportion and characteristic embodiment of grace and charm but having no traditional style from which to evolve a present and more modern ideal. As a result a great deal of our American architecture partakes too much of a foreign feeling and the apparent strength of some archaeological tradition is too noticeable as an under influence upon the establishment of such examples of our American ideals.

We use modern construction and antique design. It is not to be wondered at that foreign critics of taste, culture and refinement as to those things which bespeak "the eternal appropriateness of things" regard the perspective of American architecture little other than ridiculously misfitting

and esthetically vulgar. The American people as a race need to make American architecture symbolic of a fitting means to appropriable ends and it behooves the American architect, builder and owner to see that the American building becomes such. This is as essential as the endeavor to secure an artistic creation and should be as apparent as are the habits we have gotten into of making our buildings mechanically daring and constructively complicative. We need to inculcate more American originality and less foreign reproduction into our buildings and until we do so we only bring upon ourselves the verdict of criticism well qualified.

However true it may be that a certain style conceived by the progenitors of a race may warrant revival in architectural building still it must be admitted that a work of art to be great and worthy of an undying reputation must be strictly modern at the time of its inception and development. Copious imitation, however clever in execution and workmanship, can never be made to endure the test of justified censure. The American architect needs to develop a more original concept in his work independent of past creative genius and, as for the American people, the artistic sense must be greatly improved before American architecture becomes anything other than mere dwelling places characterizing one nationality and serving the habitations of another.

As for our abodes of the American rich, there is a long journey ahead before architectural art can justify them into being satisfied with something other than the ultra-pretentious French chateau or Italian villa inspired only with the lavish expenditure of American dollars but impoverished with the sentiment of foreign appropriateness. The fact remains that it is only a question of time, however, when the tastes of the American people will have undergone a great change for the better and when this transfiguration of ideals has been brought about American architecture will have received a new impetus for the better, though some of its glorified practitioners may be caught by the consequent tumbling of reputations.

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Concrete Ships Resist Torpedo Blow

REINFORCED concrete ships are safer against torpedo attacks than steel ships, according to Mr. Roy H. Robinson, constructing engineer, in a letter to the chairman of the committee on commerce of the U. S. Senate, and printed as part of a Senate document. "The mortal wound which the torpedo inflicts upon the steel hull," Mr. Robinson declares, "is due to the fact that the blow on a riveted steel ship, composed of small plates held together with thousands of rivets—650,000, and often a great many more—in 7,500 to 10,000 ton hulls, opens up seams over a very extensive area. The whole ship is literally shaken, as so frequently witnessed, and the water pours in throughout such an extent of the hull that transverse bulkheads prove of little use and gigantic ships are seen to go down completely flooded in a few minutes. If rivets and rivet holes in this connection are not a source of weakness, loosening up and punching out, then the photographs which bear evidence of whole lines of rivets driven from the plates and missing near the point of explosion, while the plates themselves have remained intact, are in error, and the simultaneous flooding of numerous bulkheaded compartments sufficient to sink a large ship in a few minutes remains unexplained.

"In concrete ships the shell presents no seams and small plates and rivets to be rudely shaken apart. The material is homogeneous, and, what is more,

it will not conduct, but instead deadens vibration; whereas steel, with its conducting proclivities, spreads the shock far and wide. The result is that in a concrete ship the torpedo blow is localized to the small area of shell where the hole is punched. The single compartment between transverse bulkheads will be flooded, and there the trouble will normally end. The concrete ship will remain afloat; the steel ship goes down.

"Nor will the concrete hull be 'racked' the more, but on the contrary it will suffer presumably much less than a steel ship for the very good reason of the 'extra weight' which has been so much dwelt on, and particularly because of the excessive strength lent the hull by virtue of the great compressive strength which is added in surplus to the hull in the employment of concrete.

"This is not theory; this is not an 'open question.' These are not only facts which must be the case, but they are facts which have actually been demonstrated in Danish concrete hulls which have been torpedoed."

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Restricts Building of Concrete Ships

THE decision of the Shipping Board that private building of concrete vessels must be confined to barges of 1,000 tons or less, coming at a time when the demand for ships grows greater daily, is a surprise not only to the concrete ship enthusiasts but to the public also. This, too, in the face of the facts set forth by its own concrete ship engineering expert, Mr. R. J. Wig, and accepted by the board, that

"The reinforced concrete ship can be built structurally equal to any steel ship; and

"The construction of concrete hulls will not interfere with the present programme for the construction of steel and wood hulls, in so far as labor and materials are concerned."

Private interests at every suitable concrete shipyard location are eager to engage in the construction of concrete ships and hundreds of ocean-going vessels could be added to the emergency fleet. But because the Shipping Board believes the supply of engines and boilers will be needed for steel and wooden vessels, private interests may not build concrete ships. That is the explanation, at least, given by the Shipping Board for its decision.

Advocates of concrete shipbuilding are loath to believe that engines and boilers cannot be secured for all the ships that can be built. They claim no adequate effort has yet been made to mobilize the engine and boiler manufacturing industries for the war, and that large engine plants are actually without orders. They argue that it is incredible that the manufacturers of engines and boilers, if properly mobilized, cannot make them faster than ships can be built.

For the present, at least, concrete ships will be made only at the five Government yards for which sites have been selected. These yards will be prepared and operated by private contractors acting as Government agents. Contracts have been made for the construction of only 200,000 tons of concrete ships at these yards. Mr. Wig, the Shipping Board's engineer, in a report made April 5, 1918, estimated that if the building of 3,500-ton concrete ships was started immediately 600,000 tons could be completed by December 31, 1918, and that if the building of 7,500-ton concrete ships was started by June, 1918, 1,375,000 tons could be completed by August, 1919.—Southwest Contractor and Builder.

"Made in the United States"

EDITOR The Architect and Engineer of California:—What do American people, the business men, and even the largest corporations know about Russia?

To the mind of nearly every American business man, Russia is a vast, cold country, with no political freedom, for many centuries ruled by absolute power of the Czar, with a very low industrial and commercial development, and with a rough, ignorant and uneducated population. That is all that even a broad-minded American business man can say of Russia.

Certainly, the man who has largely traveled abroad, who knows more about Europe in general and has a certain knowledge of languages, beside the English, thinks differently. To such a man—Russia is the field of very many industrial and commercial opportunities.

What most separates the United States from Russia?

Not only the vast expanse of water, difficulty of communication, with such a large country on the other side of our globe, not only absolutism of the Russian Government, but most of all—the Russian language.

Illustrating plainly, we must state, that the English language is a polyglot language, and is most similar to French, German and the other languages of Western Europe. The English language cannot be compared with the Russian and other branches of the Slavonic languages of Eastern Europe.

To begin with, the Russian alphabet is the first puzzle for every American, born in the United States, not saying anything of the commercial, industrial, official and governmental press of Russia. How can we do the business, if we do not know the language?

This is the biggest obstacle for every American business man, and even for a corporation, in establishing certain industrial or commercial concerns in Russia, to deal with the Russian Government and the people, to have representatives, even from large concerns in America.

Speaking largely of American commercial and industrial opportunities in Russia, we can say, that there is an immense field and future for nearly every branch of American industries.

Russia is a large territory, with nearly 170 millions population, with countless natural resources of minerals and metals, with a tremendous agricultural life and a very low development of industry, representing a great field for commercial and industrial transactions with the United States.

These two countries, the United States and Russia: the first, extremely advanced and developed economically; the second on a very low level of civilization—these two countries should be drawn closely together, to deal with each other, especially when the European struggle is over.

The United States Government, and even the largest corporations, foresee a very great industrial competition between America and Europe. Every country, economically, commercially and industrially developed, needs the export of its own industrial products. The home market getting smaller and smaller every year, soon a large industrial development comes to a certain over-production. The United States, long ago, needed a market abroad.

But here is Western Europe, the largest competitor; England with her industrial and maritime development of transportation; then Germany, developed to the maximum in all branches of manufacturing concerns; France and other countries, economically and industrially advanced. All these countries are the United States' biggest competitors.

All these countries, long before the European war, had an overproduction for supply in their own home market and naturally exported goods to Russia. Germany supplied Russia with all kinds of machinery; France, with articles of luxury; and even small Belgium (now crucified) exported her industrial products to Russia. But these countries with their industrial and commercial transactions with Russia, never could fully supply the Russian market, not having enough facilities for the best success, being short to finance certain concerns, or competing too much among themselves in only certain industrial centers in Russia.

Metal manufactured products of the United States industries can find an extensive market in Russia, because of the very low development of this branch there. Constructions of all kinds, in connection with the metal industry, have countless demands in Russian towns and the largest cities. Sometime ago Germany exported to Russia machinery and other similar products, but they were "Made in Germany," and, not only the wisest American business man knows what this inscription meant, but a long time ago Russians were acquainted with the short durability of such products bearing this mark.

The large agricultural interests of Russia do not know what an irrigation system is, and demand only harvesting machinery and cultivating improvements. For some time the United States has led the globe in the development of this branch of machinery. McCormick, Osborn and other machines are more than welcome for Russian agriculture.

Going into smallest details, we can say that the metal industry of the United States and construction connected with this line offer a tremendous field and opportunity in Russia.

How many towns and even cities there are in Russia that have no street cars, electric lights, gas or other equipment of modern industries and general development of civilization! How many well navigable rivers, even in the centers of large towns and cities, without bridges!

Speaking of communications in a territory as large as Russia, we must say it has the lowest level of development in all Europe. Natural resources of the Russian soil stand waste, hardly touched, rich in gold, silver and other minerals.

There are some English and French companies doing well in the mining line in the Caucasus and Ural mountains, but there is more than enough room for the American enterprising spirit and for American investment.

Russian people lack enterprise, special education in certain branches of industry, and are short for what we call "business grip."

Sometimes we hear from Americans the statement, "Russians are poor and ignorant." Yes—those who come here as labor men; but we must not confound the two things: Russian Government (Czar and bureaucrat) and the Russian people. The Russian treasury is poor in debts to other countries and now, even to the American pocket-book, but the Russian people are not poor at all. Taking as an illustration: the industrial and commercial centers of Russia are owned mostly by a few prominent families, private money—not even corporations. A very large grain commerce is concentrated mostly in the hands of two families, who really are multimillionaires—not by rubles but by dollars.

The Department of Commerce of the United States and representatives of American industries should open their eyes more and more toward the market abroad, and mostly toward Russia, where all kinds of opportunities for Americans are in the very near future.

Returning to the subject of the Russian language—the Department of Commerce or private concerns, as little as they deal with Russia, employ only Russians from Russia. But how many American business men know the Russian language? Do they have schools to educate in this language? Do they realize the usefulness of this language for future transactions with Europe, and with Russia especially?

The opportunity for American industrial products is greatest.

"Made in America," or, better still, "made in the United States," should replace all other inscriptions in Russia, in the very near industrial competition of Europe with America.

M. J. Desiré,
Stanford University Hospital.

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The Day of the Remodelled Building

"ONE of the greatest conservation movements in the history of this country is being carried on just now," says N. F. Hoggson, president of Hoggson Brothers, the New York builders. "And it has practically escaped notice. I refer to the remodelling and modernizing of old buildings. Today, instead of ruthlessly tearing down honestly built, substantial structures, we are looking them over with an eye to adapting them, by skillful alterations, to serve present needs.

"A great number of business buildings throughout the country are being modernized and made over into up-to-date structures through the art of remodelling. This is particularly true in regard to bank buildings. Banks have enjoyed an unprecedented rush of business, and have not only expanded their own departments but they have added Liberty Loan departments to aid the Government. The increased business has caused them to become cramped for room. Additional space, better facilities, enlarged accommodations, are imperative."

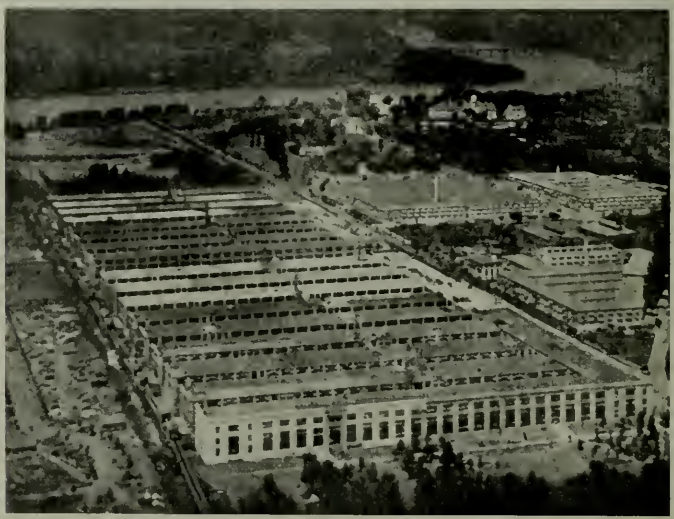
The best present solution of the building problem seems to lie in remodelling, in rearranging banking quarters and gaining the required additional space needed by expert planning. Hoggson Brothers, who specialize largely in bank designing and construction, report that most of their recent contracts have been remodelling jobs, and that their organization is having the busiest year since 1912.

The two principal reasons for remodelling are the utilitarian and the aesthetic; the need of more space or more convenience and comfort, and the natural desire to make a building more pleasing to the eye. Both requirements ordinarily can be met by proper remodelling. This is true not only in regard to banking quarters, but applies equally to the efficient arrangement of space in big business organizations.

An unprepossessing exterior often may be altered into a dignified and imposing façade, while scientific rearrangement of space in a banking room will many times solve the problem of overcrowding.

Remodelling work, and the scientific planning and layout of space for business purposes, are arts separate and distinct from original designing and construction. For the concern which is confronted with a problem of enlarging its quarters through alteration, and rearranging its space on a scientific basis, the caution may be advanced to look for the specialist in work of this kind. Today some of the big building organizations are giving considerable attention to this comparatively new phase of the building art.

NEW PEBBLE BEACH LODGE
Lewis P. Hobart, Architect



GROUP OF REINFORCED CONCRETE OFFICE BUILDINGS FOR WAR AND NAVY DEPARTMENTS, WASHINGTON, COVERING 40 ACRES OF FLOOR SPACE

The Architect of Tomorrow

LET me say what I think the architect of tomorrow will be, writes Mr. C. H. Blackall in The American Architect.

In the first place, he will be an organization rather than an individual; a directing, discriminating motive force at the center of a combination of forces, and that organization or combination will be just as essentially a business one as the United States Steel Corporation or the Standard Oil Company, and exactly the same principles of economy, material efficiency and careful attention to detail will of necessity manifest themselves. This organization will be prepared not only to carry out work on definite lines, but to pledge itself that they will be carried out right and on time. In other words, it will guarantee results, and not be able to avoid responsibility by sheltering itself behind a cloak of professionalism. I do not believe that it will assume all the functions that we now hand over to the master builder, any more than I believe the master builder will lose materially in his particular line, but it will have a greater degree of direct contact with the mechanics, many times, I believe, a direct hiring of them on behalf of the owner and a general direction of the work which is now very often in the hands of brokers styling themselves master builders. And the fact that this organization is to free itself from mere professionalism and abandon the cloister or studio point of view, will necessarily bring it into the world's markets so that it will have direct contact with the producing factors that enter into a building. It may even direct these producing factors and be a part itself of the producing side; and still further, as all large works have to be financed, I see no reason to doubt that the architect will hold an important position as an administrator, and therefore necessarily, to a certain extent, as a financial agent.

Furthermore, this organization will be formed not to win a competition or to impress a susceptible public, but to carry out building. The kind of organization that will win a competition is pure theory, and pure theory is what we must avoid. The organic development of building, if looked at right, is pure architecture, and that is just what the world wants. It is to be hoped that the future may see a larger abolition of that unfortunate method of bringing ourselves before the public which we call competition. The true competition always is in the finished product, but the idea that by a series of drawings an architect can win recognition is, I believe, at the bottom of a good deal of our present limitation as a profession, and the more resolutely we in the future refuse to consider architecture as in any sense drawing, as in any sense picture making, the more surely will we enter into the larger view, which the coming years will command, and to which we have been so blind in the past. There are many who have had their eyes opened to the extent to which we have not as a profession properly viewed our limitations, and we will have further disagreeable experiences, I am afraid, before the true architectural point of view is brought home to us. We are still passing through the mill, and compensation for our present woes ought to be, in part at least, in the feeling that out of defeat can and will grow a better equipment for victory.

Does this imply architecture will be any less a fine art than it is today? Not a bit of it. The trouble with so much of our pre-war architecture was not that it was too artistic, but it was not artistic in the right sense, in that it was not fit and appropriate for its purpose. Ruskin's emotional stone carver who, just for the love of carving, would cut a wondrous bit of detail way up in an obscure loft, where no one would ever see it, could keep on

doing just that sort of thing sometimes, but he would not be in the architectural spirit. The place for that kind of work is in a museum and not in a real building. Architects are to build real buildings, and the man who would waste that kind of sentiment would be out of place in the very practical, very tense and very demanding world of after the war. The best art always has been the art which was the most real in its application. Architecture would still be the mother art, but the architect, while admitting the pre-eminence of the artistic thought, would, I should hope, recognize also that art is not pre-eminent or maternal which is simply blossoming for itself without a distinct purpose, and the architect who thinks for a moment that the contemplative, aesthetic point of view, delightful as it is, necessary in a certain degree as it has been found to be, will suffice for after-war conditions, is bound to receive a harder jolt and a more bitter disappointment than in these parlous days of 1918. To paraphrase the poet, architecture is real, architecture is earnest, and mere unrelated beauty is not its goal., A dream of pure art, a dream of beauty cannot be spoken of the real soul of a building.

Nor does the foregoing imply the elimination of the individual. There have been some wonderfully endowed men like Wren, Mansard or Bulfinch, who seemed to be able to compass all sides of our profession and to properly subordinate the relative factors; but, after all, most of us work best in harness and with limitations, and the very fact that an organization implies subordination of one part to the other is a salutary restraint on the development of the unessential. Again, a man might be just as strong and true alone by himself as he would be as an individual doing similar things at the head of an organization, but somehow I cannot help feeling that the individual architect will be much more of a rarity in the future than he has been in the past, and that in organization, in co-operation, and specializing within the limits of a firm, the architects will find their best opportunities.

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Economic Life of Office Buildings

AN examination of the older office buildings in any city will convince almost any one that the economic or commercial life of such buildings has not exceeded 40 years, stated Mr. Edward A. Renwick of Holabird & Roche, architects, in a paper presented at the recent convention of the National Association of Building Owners.

Many of us, continued Mr. Renwick, feel that with the advent of the modern skeleton construction, which had its birth in Chicago in 1887, the climax has been reached in construction and that these buildings will at least last 100 years—physically they may last 200, but it is doubtful if they will have great economical value when 40 years old.

Every year we see buildings 25 to 35 years old being replaced with new structures because their commercial life has ended, although perhaps they are still in good condition physically. Some of these when built were the best that could be produced with the engineering and architectural talent of the day, but new devices and methods of construction or changes in business requirements have destroyed them as competitors against these more modern buildings.

There are a number of modern fireproof buildings that have been taken down to make room for larger or different classes of buildings, because these removals made the land more productive by the change, even though the cost of the original structure was added to the value of the land. Of course,

had the owner been wise enough to have foreseen the new requirement and designed the building so it could have been readily converted to the new use, its commercial life would have been extended, but such provision would have added a considerable burden to the cost.

How can we best provide against this economic loss? The answer seems to be to set aside a sum for depreciation annually and invest it and its accrued interest in safe securities. The average owner feels that this depreciation will be offset by the increase in the land values, but to benefit by such increase, a sale must be made. Would it not be far wiser to set aside a fund and invest it in 4 per cent securities and thus, when serious changes are required to prolong the life of the building, the funds will be at hand to do so, and thus revive the economical life and check the rapid depreciation with consequent lowering of the character of the tenants. If a sum equal to 1 per cent of the cost of the building is so set aside annually and invested at 4 per cent and the interest reinvested at 4 per cent, it will equal the cost of the building in 40 years.

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Architect Suggests New World Language

EDITOR THE ARCHITECT AND ENGINEER OF CALIFORNIA: At first blush the subject of this communication may not seem in keeping with the purposes of your magazine; but a little consideration shows it of more than ordinary interest to your readers—architects, engineers and constructionists—for, after all, they are the pioneers of civilization in all countries in this mechanical age and come into contact with all peoples and races and a common language throughout the earth should prove of inestimable benefit to them.

In the fight of *Culture* against *Kultur*—Humanity against Devilry—well allegorised by the graceful "C" of Culture and the barbaric "K" of Kultur, one of the aids to the victory of the first and the permanence of said victory is the use of a *common language* by all peoples, by means of which a gradual overcoming of prejudices and hatreds among nations caused by the want of a common medium for conveying ideas, which leads to misunderstandings and so to enmity, will be accomplished.

Not only the desirability but the necessity of a common language is so patent to all but a few extreme nationalists afraid that their own languages may be superseded that no argument on this score is required. Still it is well to state, so as to allay the fears of said cavillers, that the adoption of a world language will have no effect in doing away with the national languages now in use; these will naturally be used within the several nations while the common language will be used internationally. To prove that this will be so, let us take for example the nomenclature of the science of botany. Here the Latin language is used for the purpose of classification, but this has not superseded the names of the plants in the several national tongues, *e. g.*—what is called "Hyoscyamus Niger" in the scientific terminology is called "Henbane" in the English tongue, and the other tongues keep their own names for it.

Common languages or nomenclatures have been adopted not only in botany but in the other sciences, such as natural history and medicine and in certain degrees by professional men in architecture, engineering and applied mechanics; also in the codes used by wireless telegraphers and others; partially by educated people using Esperanto; and locally in some places as instanced by the "Chinook" and so-called "Pigeon English." But no uni-

form tongue has as yet been used throughout the globe for the plain, ordinary, uneducated masses. However, the partial adoptions stated above show that it can be done.

The prime purpose of a world language at this juncture is to add to the efficiency of and save the time of all workers working against evil whatever their tongue and race by affording them the best possible verbal intercourse—be they soldiers or sailors, engineers, architects or builders in their intercourse with the workmen under them of different nationalities; those engaged in nautics and aeronautics, in commerce or in industry.

Considering this purpose, we feel that the English-American tongue best fulfills the requirements. It is the most generally diffused throughout the globe, being spoken from the coast of China and Australia all around the world to California and Alaska. It is the ruling language of India, Africa and the Malay peninsula. Most of the merchant marine being in the hands of nations speaking that language, every port in the world is acquainted with it.

A world tongue, besides being based on the language best known and generally used throughout the globe, requires another qualification, viz.:

That it shall be a speech made for *talking* purposes chiefly: for the use of the illiterate and of those that can neither read nor write. The science of language has two arts—the art of *talking* and the art of *writing*: the first the most primitive and universal, the second arising as the necessity of recording talk becomes apparent. Talking can be done by the most ignorant people, who know nothing of writing. Therefore, a language to be world-spread must be one based on the talking idea; therefore, languages based on the literary idea (such as those derived from the classical languages), with their numerous genders, inflexions, declensions and conjugations, are not suitable for a world tongue. And this leads up to the second requirement, viz.:

That a *world tongue* must be based on one so far developed along the line of modern ideas that it has become shorn of all the above-mentioned trouble makers and so can be talked and understood of all races—Chinese, Finns, Lascars, Arabs and Negroes, as well as by all the Aryan peoples; and be able to be written by the stenographers of all nationalities.

Now, in surveying all the tongues in the world, which one appears to best fulfill these requirements?

The *English-American* again. It has a greater range of vowel sounds than most languages; its letters and alphabet are those of the principal languages; its words of Anglo-Saxon stock are short, direct and to the point; its grammar and syntax are amongst the simplest of any language.

Therefore, I believe we shall do well to adopt the *"Old English"* as the motif for a world's tongue, notwithstanding its many defects.

These defects can be remedied. And it is worth our while, especially at the present epoch, to discuss how this can be done so as to shape it into a practical tongue for all peoples.

I know that space will not allow me here to formulate the principles upon which such a language shall be founded and to outline it. This, however, is already done and whenever sufficient interest has been evoked it will be published, as a nucleus around which shall gather the ideas of others; and thus finally present a workable language to the world which can be adopted by all countries for common use between all peoples of the earth.

W. Jones Cuthbertson.

War and Architecture

IN his annual address to the Cape Town Institute of Architects, Mr. W. J. Delbridge, President of the Institute, made some happy reflections upon the question of the connection between war and architecture. He said in part:

At first sight this conjunction seems impossible, but serious students of our art will realize a connection as intimate as that between cause and effect.

In his "Crown of Wild Olive," which should be read in this connection, Ruskin says: "All the pure and noble arts of peace are founded upon war, no great art having yet arisen upon the earth save among a nation of soldiers."

After multiplying historical instances, Ruskin proceeds to discriminate: "This is not true of all war." It is not true of "the barbarian wolf-flock such as that under Genseric or Suwarrow; nor of the contest of ambitious nations for extension of power—none of such forms of war built anything but tombs."

I venture to present to you three phases of the connection between war and architecture which have an interest relating to the all-absorbing and Titanic struggle now proceeding.

These phases of our art indicate it as alike the prophecy, the record and the result of war. Because "men walk as prophecies of the coming age," architecture and sculpture stand in the very forefront of revelation.

They are the largest of the concrete expressions of man's mind, and if in pre-war days our philosophers had fitly meditated on current expression of these intimately related arts, the war might have found us better prepared. This supposition becomes strengthened when we reflect upon the vagaries of the new art seen in the nineties of the last century, which indicated so clearly the increasing restlessness of the modern mind, or when we reflect upon the growing decadence of latter days evidenced in the sumptuous shams of Neo-Grec or the strivings to express idiosyncrasies displayed in cubist and impressionist art and their derivatives. The seal of absolute certainty is gained when we view such a monstrosity of architecture and sculpture as was wrought in Germany at Liepzig between the years 1898 to 1913. The monument had as its architect one Bruno Schmitz working in collaboration with the sculptor, Franz Metzner. It is a monument of the Battle of the Nations as German historians persist in calling the struggle of 1813 in the plains beside Leipzig, when Napoleon lost the day. For an extended notice of its crudely brutal and revolting architecture I must refer you to The Architectural Review of November, 1916. The author of the notice there describes the work as "No memorial of the glory of war, but testimony to the brutal strength of a military despotism that fears neither God nor man—a negation of every artistic tradition of the human race; the freak of a brilliant brain distorted by Treitschke and his kind." So much for the architecture of the Völkerschlacht denkmall. The main gallery of this nauseating artistic offense contains four large groups of sculpture. One represents the fecundity of the nations by a seated figure suggestively Hermaphrodite suckling two infants who claw the breasts while the main figure, in an agony of exhaustion, digs talon-like toes into the base supporing this revolting and decadent composition.

This was the culminating specimen of alleged art in Germany before the war that followed the so-called Art Noveau. It was fitly preceded by the Bismarck memorial finished at Hamburg in 1906 and was followed by

the brutal, clumsy and immense wooden idol of Hindenburg done since the beginning of war in Berlin.

If, as the German Professor Nippold formerly assured the world, this war lust of Germany was "a system complete and conscious of its goal," then you will see that the spite medals, the songs of hate and the wooden idols of the Germans are only the manifestation as those earlier memorials were the prophecies of the present holocaust of boys.

Nothing to parallel these things is found in other lands not even in "The ramshackle Empire."

Now, these memorials were intended as records of the German past, but actually became prophetic of the future of Europe.

Of architecture as recording past events as "fossil history" (not as a "drum and trumpet" one) we may say that it is the record of war.

As a record of current events, the contemplation of some architecture has a tragic significance for us. We have known and loved the masterpieces of departed spirits on the Flanders' plains, and the destruction of these affects us almost as poignantly as the loss of life, the reason being that in those venerated stones of Ypres, Louvain and wherever else the desecrating and desolating feet of the Hun have passed, there abode a very spiritual incarnation of those who designed them in beauty and wrought and built them in truth. The mental and moral significance of those ruined shrines of architecture is, however, something of abiding memory and human interest though their material form is lost.

Philistines may object to such a sentiment as the lavishing upon inanimate things of emotions only properly rendered to sentient beings. Such criticism fails to recognize the profound if subconscious influence of the inanimate upon the sentient.

Surely the first fair-haired Umbrian presentation of the Madonna which begat through contemplation a race corresponding to the inanimate ideal: or the finishing of the "David," so that the citizens measured time for long as before or after its completion by Buonarotti or the erection of a Parthenon, a Potala, a Karnak or a Church of the Holy Wisdom are fitly among the events and things that rank with (as some are indeed reckoned among) the seven wonders of the world. Recently I read that a shell had destroyed the little church at Soignies in Belgium. I remember a sacristy there, where I sat worshiping for many a summer day the choice spirit of the Renaissance behind one who had arranged and carved the varying outlines of hundreds of oak panels with a hand as deft and sure as that of Jacopo della Quercia. Now the work is no more and the world is much poorer in that war has effaced such records. These can never be restored. Thus war is the negation of the human record in architecture, but by this fact it inspires a spirit of reconstruction; in emulation of departed glories it has destroyed; that has produced some of the finest memorials of our race in all times. There were times when our art was defined as civil and military and of its manifestations in the latter character such piles at the Cathedral at Albi, the Castle at Carnarvon and such persons as the architect of Hagia Sophia or even Vauban, can speak. Those who live in security sometimes build flimsily but because life is transient.

> "The earth builds on the earth, castles and towers,
> The earth says to the earth, all this is ours."

Of architecture, as the result of war in the past, time forbids speech at length—art, history, and the ancient world itself abound with instances and illustrations.

Will this war result in progress in our art?

Certainly it will provide many constructive opportunities. In as far as it has provided opportunities for heroism and chivalry among both the quick and the dead, it will bear fruit in imaginative efforts of writers, painters and sculptors. Even now signs are not lacking of a present day Renaissance in these manifestations of romantic art. Shall our own lag behind? We trust not! The blood and strife of religious war and persecution long ago became the prime mover in creating in this land far from the scene of strife a homely indigenous art which is our pride and heritage.

The present strife has produced a new military architecture in reinforced concrete: the possibilities of steel have been yet further explored to give man wings and fins and who shall say what may result from such things?

The aircraft stations of the future may inspire some Wren to produce new glories from old types or out of new possibilities.

* * *

Light Weight Concrete for Ship Construction

NUMEROUS studies have been made recently for the purpose of finding a light weight concrete for ship construction. The Department of Concrete Ship Construction of the Emergency Fleet Corporation, according to the Emergency Fleet News, has succeeded in developing an aggregate weighing only 70 per cent as much as the aggregate commonly employed in concrete construction, which is satisfactory from the standpoint of strength requirements.

Tests of a volcanic scoria from New Mexico, made a few weeks ago at the University of Texas, indicated that this material would give a concrete weighing about 120 pounds per cubic foot and having a compressive strength of above 4,000 pounds per square inch at the age of 28 days. The volcanic scoria in a solid condition weighed 93.4 pounds per cubic foot. Crushed between three-fourths inch and one-eighth inch in size it weighed 39 pounds per cubic foot loose; the screenings passing the one-fourth-inch screen weighed 78 pounds per cubic foot loose. Good results also were obtained from tests of a standstone which weighed solid 137 pounds per cubic foot.

Concrete made with the volcanic scoria, as coarse aggregate, and its screenings as fine aggregate, weighed 15 per cent less and had 12½ per cent more strength than a limestone concrete made at the same time and in the same way. The concrete made of crushed sandstone and its screenings weighed 10 per cent less and was 12.4 per cent stronger than a similar concrete made with gravel and sand.

* * *

Wire and Terra Cotta Fireproof Lath

A new type of fireproof lathing, which has been used with satisfactory results in the East, consists of a rectangular mesh of light wires with cross-shaped terra cotta tablets baked into the wires at the intersections. As the tablets are detached, the lath can be handled in rolls. The terra cotta not only stiffens the wire but furnishes a bond for the plaster so that it is not necessary to force the mortar through the mesh to form a key on the back. This lath has been used to make partitions, the lath being stretched between the ceiling and the floor and plaster applied to both sides. Its use for this purpose has been approved by the New York building department.

Mobilizing the Art Industries*

By RICHARD F. BACH, Columbia University

IT HAS taken us a long time to find out that when the nation goes to war the industrial arts perforce go with it. We have gone into European battlefields in the cause of democracy, while at home, in the industrial arts at least, we have allowed our development in the last quarter-century to become almost ruthlessly autocratic. We have construed democracy to imply the extending of the greatest attainable benefits to all equally. Yet we all know that it is nothing short of the truth to say that in the industrial arts field, notably in those contributing to home furnishings, the greatest benefits are held at the call of the greatest purses. For in the industrial arts, the real benefit, after primary utility has been satisfied, is the factor of satisfaction and mental improvement growing out of good design. I can say without scruple that good design is no more expensive than bad design, and that if good designs are not available for the man in the street, the system which produces these designs must be undemocratic and therefore wrong.

In view of this major premise it is obvious that the matter of mobilizing the industrial arts takes on a much larger significance; for it implies not only that the fabric of production (and under this head we include the agencies of distribution) must be brought to the pitch of highest service under present exigencies, but that the fundamental structure of both producing and distributing factors requires revision. Mobilization implies the achievement of productive efficiency on the basis of maximum effort and maximum performance, with minimum outlay and minimum waste. Mobilization requires every force and quality which can be brought to bear toward a service ideal. This service ideal the industrial art field in America has made practically no effort to attain.

It may be a startling assertion to make that the machine is undoubtedly the greatest single advantage and aid that has ever been offered to civilization so far as the industrial arts are concerned. If the machine is to be ruled out as an agent of productive craftsmanship, it is only fair to say that the mallet and chisel must also be laid aside. The difference is in degree only. The machine makes possible unlimited production. Its application is subject only to the ingenuity of the brain, and properly used, it reduces the cost of a good thing sufficiently to make it possible to carry that good thing to the remotest regions.

If there is anything wrong with machine manufacture of industrial art objects, it is not the fault of the machine; for this cannot do its own thinking. If the machine has not served us well, it is because we have projected into the cold and only mechanically responsive lathe and loom those qualities of animation and imagination which the human brain alone can contribute. The machine has been nothing more than the apotheosis of mere mechanical execution, a glorified tool which may be made practically automatic, but whose finely articulated motions are not to be confused with the activity of the human brain.

When the machine first proved its worth as an agent of production, with characteristic human frailty we leaned upon it too heavily, marveled at the wonderful things it could do, and all but forgot that before the fine loom with its intricate Jacquard attachment could perform its office, a design had first to be made. We became so enamored of the process of production that the more important factors of design and finish were obliged to yield place.

* An address at the convention of the American Federation of Arts, Detroit, Michigan.

Every improvement in the machinery of manufacture has pushed craftsmanship further into the background, has developed the machine operative, and has almost eliminated manual industrial art production because of the reduction in price made possible by mechanical execution. It is high time that these conditions were modified. I shall be the last to advise the elimination of the machine in this process. I shall be the first to advise that with the machine as one of the agencies of production, excellent design and ultimate finish of industrial art objects be once more made the leading considerations.

Craftsmanship can never again mean what the word implied before the nineteenth century. The reasons are obvious: the commercial value of the machine is one reason; democracy is another. If all products were handmade, could we all afford them? Yet does not the poorest among us feel that he is entitled to these products? There is no other way of bringing together the average home and its furnishings than through the machine. It becomes our task, therefore to give the machine its proper place and to revise our standards of craftsmanship in such manner that the craftsmanship of design will provide for the imagination, the machine for the mechanical execution, and the human hand for the craftsmanship of manual revision of machine-made products. Thus we shall harness the machine to the mind, not the hand to the machine. Unfortunately, the latter condition still holds true, and as long as this is the case the industrial arts cannot realize a service ideal, for they will be controlled by those conditions which now exist and which are the direct result of the misuse or abuse of the machine. The proper coordination of machine processes with effective design and a craftsman revision of the finished product must be the first step in mobilizing the industrial arts.

This will not mean the elimination of the craftsman who does all his work in various degrees without the aid of the machine. Of craftsmen in this sense we shall never have enough and we need large numbers of them in all branches, for they give tone to American design. But that which will assure the future of industrial art in America is not only craftsman execution, but the craftsman attitude of mind toward all of our facilities, design, materials, and tools, and these tools include the most complex machine that can possibly be devised. We must bear in mind that a time-saver is a money-saver, and if the money so saved is used only in part for a manual revision of the mechanically executed object, the general gain in the long run surely will be a positive achievement.

It is only because the industrial arts have not hitherto taken their proper place in the scale of American life that now in war times certain of them have been classed by the national government as non-essentials. Manufacturers have not been able to prove to the government that their products make for mental equilibrium in time of peace and so must likewise be an asset in time of war. The industrial arts have been in our national life only so many lines of manufacture. They have not demonstrated that they are constituted on the basis of that same fine fiber of imagination upon whose maintenance national progress depends, whose vitality actuates our growth. Furthermore, they have not been able to make this felt in such manner as to impress upon the government, and the people as well, the fact that if their course is now interrupted, an economic disadvantage after the war will result, and the nation will be deprived of at least this exemplification of its esthetic or spiritual side.

But reliance upon the machine has brought other difficulties. One of these is seen in the present character of the agencies of distribution, by which I mean the methods of bringing furniture and other industrial art

products to the people. The rapidity of turning over raw material into finished articles that bring a quick cash return has enticed manufacturers and their abettors, the dealers, into making supreme efforts to catch the public eye by novelties, and the public purse by low prices and exuberant carvings, colorings, and the like. Those from whom we buy are now our arbiters of taste. Unless we have something special made, we can buy only what they have to sell. If we should want a few yards of curtain goods at a certain very modest price to hang at the window of a skilled mechanic's flat, we should have the greatest difficulty in obtaining a simple yet not tawdry design. If this same mechanic is to repaper his rooms, he can select only from the landlord's book of patterns, which is an inspiring text book of what wall-paper ought not to be. Such instances are too patent wherever we turn.

These novelties are furnished on the basis of the customary misstatement that they are "what the people want." May I suggest the revision that they are what the people can get? By providing such things as part of a consistent policy, distributing agencies, dealers, and others in the same field are to all intents and purposes conspiring, however unconsciously, to keep public taste at a low level. The manufacturer and the distributor cannot wait for the public to say what it wants; their taste must be better than the public's, and they must anticipate its wants. To be sure, the general standard of taste in this country, so far as the industrial arts are concerned, is nothing whatever to boast of. Fifth Avenue is not a criterion by which to judge America. The real average would be nearer the other side of town.

But is it not the manufacturer's province to make well-designed things? Assuredly it is, but very few manufacturers sell to the people. They sell to the middlemen, and the middleman's standard of appreciation, based on contour, color, and style, is a very puny thing compared to his standard as represented by the cost of the article and the mark on the price tag when it is sold. Dealers and distributors generally have not insisted upon quality of design. Quality of execution, workmanship, materials, they know how to gauge, for these are dispensed on a sell-by-weight standard; but that indefinable quality of taste they cannot gauge, and so but few of their number know how to buy and sell in terms of taste. The manufacturers, then, can provide only what these distributors will sell; and in fairness to the latter it should be said that under present conditions it will require some courage, not to mention some knowledge, on their part to convince their patrons, the purchasing public, that the better thing is not necessarily the more expensive thing or the more elaborate thing.

In the reaching for novelty, the manufacturers have established an unsavory system of competition, and at present a new "line" of designs is brought out each year. In certain fields two new lines are issued annually. For commercial reasons the lines must differ radically in order to command attention. Short-sighted business does not see that the more often you call a person's attention to inferior things the less attention you will get each time. Arbitrary concoction of styles in furniture and furnishings twice a year is one of the most wasteful procedures as to time, talent, materials, and money that can be found anywhere in the American manufacturing world. Two new lines each year signify nothing less than two backward steps each year. Out of such processes we cannot achieve a steady historic growth which will merit the stamp "American."

In the abuse of the machine, in the manufacturing and distributing processes and methods which an inadequate understanding of the machine's scope has brought into existence, we have run the gamut of historic styles

of design to a point of nausea. A score of styles with whose invention we had nothing to do, styles representing civilizations, systems of government, communities, people long dead, have been made to do duty in a twentieth century of subways, aeroplanes, and self-starting automobiles. Let us say the first series of repetitions of past styles takes about twenty-five years. The second series will surely last but ten, for we shall know them too well by then. The third repetition may last but three seasons; the fourth will be a pandemonium. I must confess that in the resurrection of dead styles, in the manufacture of "periods" which their alleged inventors never knew, in the arbitrary cataloging of style ear-marks, Louis XVI fluted legs of chairs, Adam Compo ornament on ceilings, and what not else of the familiar gimcrack of styles made for the exalted few of another day, I can see but little hope for an American mode of expression. In this whole proceeding the machine has been abused. It has been made the agent for spreading upon the land a myriad of inferior objects which have not even the merit of having been copied.

This, then, points another solution for our present problem, namely, to approximate the service ideal by the reduction of waste in materials, waste in time and money, waste motion in distributing furniture and furnishings, in terms of present national requirements. One good "line" of design a year is worth more than two mediocre ones; and a steady improvement along certain well-established lines from year to year will be the greatest force for American education in this direction that has ever been set in motion. It is beyond question the duty of the manufacturers and distributors to combine in order to accomplish the elimination of the present enormous waste of materials due to the carrying in their stock of large numbers of inferior pieces. I can mention, for instance, a single concern which carries about 7,000 designs of furniture in its regular stock. Only 4,400 of these are on what is called the "active list," namely, items regularly in demand. Of the other 2,600 a few no doubt would have to be carried for occasional demand. The remainder represents what the designer calls "the gallery of forlorn hopes." They were made in response to present conditions which demanded two new lines of design each year. They did not "take," and so they are put down on the debit list as someone's error in judging the market.

Is it logical to assume that there can be a semi-annual market in the arts? Is there anything constructive in the willful "creation" of designs at such short intervals, when there is a premium on being "different," and when all agencies concerned—except the public, of course—consider each line of designs a gamble? At least under war conditions, I cannot see Americanism in this procedure. I can see only waste and an economic whirlpool ahead. In all fields American life has accorded itself with the needs of the moment, while at the same time trying to maintain the integrity of its fabric for the time after the job over there shall have been finished. But in the progress of America toward the democratic goal, the industrial arts agencies of manufacture and distribution are now sadly out of tune. This is not only a question of bonds and thrift stamps; these mean cash. The grim reality of war makes us take count of our faculties so that each may realize its greatest potential energy, and in the industrial arts this energy means action.

When the declaration of April, 1917, made us a party to the ideals to be maintained by the crushing of militarism, we had to face the world, so far as our industrial arts are concerned, with nothing but our machines and our bare hands. We found that our designers were chiefly of European training. We found that we had no schools to train Americans to take their

places. We found that without the antiques from abroad it seemed almost impossible to maintain a standard of design in the products we turned out. So long have we been satisfied with the "good-enough," with "that-will-do-for-now," that we have never looked ahead to that time when we should have to be self-sufficient. That is where we find ourselves now, still groveling under the curse of the average, the greatest industrial nation without an industrial art.

Herein lies the real difficulty, namely, to adjust our minds to the conviction which makes for the production of the very best on the basis of the finest facilities and equipment that can possibly be obtained. If we accept the theory that there is nothing too good for us, we shall soon have an industrial art which we can gladly call our own. But so that we may find out what is good, industrial arts must be mobilized and placed on a war footing. Now is the time.

One suggestion has already been made in this direction, namely that affecting the manufacturers and distributors. The second main line must be a campaign of education. Not a single great thing has been done to enlist public understanding and help without a campaign of education. Americans were not accustomed to buying government bonds and saving quarters; but a nation-wide campaign, figured on the basis of both crowd and individual psychology, has educated us to a real appreciation and interest in the work of the nation. Publicity has helped. So it is in the industrial arts. The saving of so many dollars, by reducing over-production, and cutting down "markets" and "lines," are all of insignificant proportions compared with the great benefits to be gained from a general elevation of public taste. By maintaining a steady development of excellent design and execution, manufacturers and distributors can largely contribute; but the campaign of education is for the public at large and for designers in particular. To accomplish this there are needed several kinds of agencies of instruction. The effect of some of these will be immediate. The value of others will be seen only in the work of years.

To begin with, we need schools, schools, always schools. There can not be too many. We need schools that teach design for a purpose and execute that purpose in material form. I visualize an ideal time when every city of 50,000 shall have an industrial arts school teaching the artistic advantages of the materials and type of skill found in its immediate vicinity: a school of furniture design in Grand Rapids, a school of lace design in Philadelphia, a school of pottery design in Trenton—these are but suggestions. But let us not wait for state subsidy. A young republic seems to be too busy with other things to provide money for these purposes out of the public treasury. Aldermen, assemblymen, congressmen may be politically exalted; but in their appreciation of the industrial arts they are but part of the public. The real support must come from those who are in authority in the educational systems of our great cities, and the backbone of the educational undertaking must be a subsidy from those agencies which profit from the industrial arts directly, namely the producing and distributing agencies. In these days of billions, it should be a small matter to provide an appropriation of half a million dollars to found a worth-while school, let us say, one thousand dollars apiece from five hundred manufacturers. This is where the real support must be found, and in this manufacturers and distributors will fulfill their responsibilities to the American people, and surely they owe us some return for their abuse of the machine these many years. This is said in a kindly spirit, for I know too many of them. I know them to be earnest men of energy and ideals. But they have not seen as yet which

way their duty lies. I know that our great universities will welcome such schools open-armed and offer aid in their establishment. In our large cities there are unlimited facilities for their development. Teachers can surely be obtained. It is our patriotic duty to establish such schools during the war.

But there are more immediate aids in the mobilization process. We need industrial art museums. To be sure, these cannot be made over night, but our great collections can be utilized from the practical point of view. It should be the most urgent undertaking of every museum containing furniture, textiles, or any other objects which could serve as examples, to make these directly available through the establishment of a bureau of industrial art by giving instruction, not as something handed down from above, as it were, in "high-brow" fashion, but by meeting manufacturers and designers halfway, the latter offering the materials and means of execution, the museum offering the model and the inspirational help. Only in this way can museums escape the usual criticism that they are but fossil collections. Let each museum establish a clearing-house for information on design and styles. Let there be frequent exhibitions of the best in current American industrial art. Let there be exhibits showing, by comparison, let us say what the laborer usually places in his flat, and what in terms of good design he could place there at no greater outlay of his earnings. The museums have one of the finest opportunities that has ever been offered to a public institution to render public service in this respect, and this extension of their present scope will involve but a small item of expenditure.

Then there are the stores and the factories. In both of these great efforts have already been put forth in the direction of the welfare of their employees and for continuing their education. In many places salesmanship is taught. But in how many factories do the machine operatives have an opportunity to learn that the product of the intricate mechanism which their own hands control began in the suggestion of some one's brain? Machine operatives have been debased to a grade less than that of a skilled mechanic. The machine operative is so engrossed in harnessing up his thread-pulling attachment that he loses sight altogether of the value of the executed textile design.

There is much to be done here, and there is much to be done in the department store and in stores devoted to individual types of articles. In how many furniture departments can we find sales persons who are able to distinguish between good and bad design? So long as a thing is Heppelwhite or Queen Anne their curiosity is satisfied. Their history may help them out; but, failing this, they would hardly know why Queen Anne had a style of her own, and whether she was the wife of Edward VII or of Richard the Lion-Hearted. In the factories and in the stores the manufacturers and distributors also have splendid opportunities for increasing the standard of American taste, and this again at a minimum outlay. The department stores above all have a special task before them in this particular field because they sell articles of a number of different kinds which, when coordinated, provide a complete interior, so that their employees in all departments need to know more than the character of the objects they themselves sell, namely, something of the relation of various types of pieces to one another.

In all of these solutions are indicated ways of mobilizing, of Americanizing, the industrial arts. Only by taking advantage of such opportunities can the possibilities of American design be realized. In industrial art mobilization means not only assistance during the war, but preparedness

for reconstruction after the war. A campaign of education will meet this end, but it must be begun at once. All of us are talking about it. Manufacturers, dealers, designers, writers, teachers have urged it. Of these only two have the funds to put it through, if it is to take the form of a great school. Let the manufacturers and dealers come forward, perhaps in groups in their respective branches; let them realize that good design will bring them greater cash returns, that schools of industrial art are an investment. American taste is advancing. American taste will advance constantly; and it will be an evil day for manufacturers and dealers after the war if American taste must again go to Europe for its industrial art products. For the industrial arts the war after the war, which has so often been mentioned, will too soon become a reality. The great nations of Europe are aware of its significance. Everywhere war cripples are being taught craftsmanship of various kinds. France has filled her schools of industrial art with girls so that the creative art fiber of the nation shall be kept intact. Under the direction of the English government German methods of production are being studied, so that these may be taken advantage of while English character is maintained. Recent numbers of an English textile periodical are filled with illustrations of German industrial schools. Do you suppose that inside the iron ring which now encircles her Germany has been idle? Let us learn from the enemy!

At the beginning our cry was, "Wake up! America." Now from Europe comes the cry, "Speed up! America." But in the industrial arts we must consider not only the service now, but also the mental equilibrium of the country afterward. So in the industrial arts we must not only wake up and speed up, but we must also build up. Propagation of industrial art for the increase of public taste toward the establishment of Americanism in design is a war emergency.

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Modern Appliances Used in Shipyards

SHIP construction all along the Pacific Coast from Vancouver to San Francisco during the past year has jumped forward by leaps and bounds. In times past, before the new speed tools were invented, it took in the neighborhood of a year, and often more, to build a good-sized steel freighter. With the advent of the pneumatic hammers and riveters, oxy-acetylene burners, etc., and more modern methods generally, steel ships have been built from keel to stack in as short a time as thirty days, and the record is being constantly lowered on the different sizes of vessels. Frame moulds are now made in the mold-lofts for all purposes, such as marking the outline of the frames on the landing slabs, and for marking the rivet holes, positions of plates, landings, stringers, etc., on the frame after bending. The time saved by the adoption of this principle is about one-half.

Owing to the abnormal conditions prevailing at the present time, there are only a few men who have a practical knowledge of shipbuilding practice, therefore the utilizing of moulds for almost all steel work tends to prevent mistakes by unskilled hands and at the same time allows the plates and steel to be fabricated in advance of the actual beginning of the work of erecting the vessel. Another point to be noted is the standardizing of the working drawings, whereby as many of the moulds as are required are available for repeat or universal work, thus making one mould do the work of several.

In some yards the shell plating, bulkheads, tank tops, decks, deck houses, etc., are fabricated from moulds issued from the loft, where the plates are expanded and laid out in their true shape. However, this custom is not fol-

lowed to the letter in most shipyards. Formerly manholes and lightening holes were punched out, which necessitated the chiseling by hand of the ragged edges; also many holes found necessary after the work was in place had to be hand-cut, which was a slow and difficult method. This has been done away with by the use of oxy-acetylene torches, which cut the holes in very much shorter time and in a way that obviates all trimming. Hand hammers have been almost relegated to the junk pile by the use of the automatic compressed-air-driven type. Pneumatic hand tools for caulking, cutting and chipping have taken the place of the old hammers and chisels. Permanent rollers have been fitted to the punching machines, so that where half a dozen men were formerly required to feed the machine, the work is now done by one man. Instead of following the former system of niching the sections of plate with a chisel and quarter hammer, and then breaking off the fragments, circular saws of mild steel, driven at high speed, are used for the cutting of shapes, such as channels, T-bars, H-sections, etc.

On the whole, it may be said the demand for rapid delivery of steel cargo vessels to offset the work of the sea-raiders has created an urgency for the installation of every modern appliance in ship construction not dreamed of five years ago. That this necessity is being so quickly met speaks well for the scientific engineering ability of the nation.

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Draftsman Builds Fabricated Ship

George Sydney Thompson, a junior draftsman employed in the Statistical Section of the Emergency Fleet Corporation, devoted his vacation recently to the building of a model ship. The ship has been presented to Mr. Schwab, says the Emergency Fleet News.

Young Thompson a few months ago knew nothing at all about shipbuilding. His model is very nearly a duplicate of the flat-deck fabricated ship being built for the emergency fleet. It is camouflaged and equipped with "wireless." Guns are mounted fore and aft and the boat in every detail is pronounced correct by men familiar with ship construction.

Thompson is the son of a scenery artist at a theater in Washington, D. C.

Problems of the Concrete Ship

By RUSSEL J. BORHEK

THE use of reinforced concrete for shipbuilding has been recognized by the engineer for the past few years. Co-ordinated effort of investigation and lack of funds to carry on extensive experiments have caused this most promising field of construction to lag behind that of any other engineering effort.

Much information has been obtained as to the behavior of wood and steel vessels under service conditions, particularly as to strains due to launching, docking, cargo carrying and wave action. The desirable qualities of reinforced concrete to withstand these stresses is borne out by test results and practice, treating the subject piecemeal and not as a homogeneous structure. From a design and structural standpoint there is no doubt of the success of the concrete ship.

The usual hastily drawn conclusion that the material will not do is not well founded and is not substantiated by a careful analytic survey or understanding of the design or structural possibilities of this most promising material. In any engineering structure a minimum of material so disposed to give a maximum of efficiency under the stresses the structure is likely to bear is the object sought. This is more than a truism in the construction of a ship, whether it be of steel, wood or concrete.

The main stresses in a ship are longitudinal, transverse and so-called local stresses. The longitudinal stresses tend to distort the ship by bending the decks, plating and sides, causing alternating tensile and compressive stresses in these parts. The longitudinal stiffening members, keel, keelsons and stringers connecting the plating, tend to equalize, compensate and distribute these stresses in the most effective manner. In a steel ship the plating riveted to the longitudinal members is a region of weakness and has to be reinforced with numerous plates to give the stiffening effect demanded to prevent the buckling of the plate between the stiffening members. In a wood ship the longitudinal planking (framed the same way) and held by numerous bolts, pins and fastenings has a tendency to slide and the seams open up. This is resisted to a degree by the caulking and fastenings.

At the bilges a wood ship is noticeably weak and much additional timber and iron used at this point to give required stiffness and strength. The pounding strains on the bottom, causing an in-and-out working of the plate, cause loosening of rivets and open seams. These weaknesses should be greatly alleviated by a better stress distribution in reinforced concrete construction. The heavy shear stresses that are always present at the quarter points, due to the excess dead load at these points, are readily distributed by increased thickness and sufficient reinforcings of the side shell plating. The transverse stresses tending to deform the ship's sides and bottom, due to water pressure, wave action or unequal distribution of loads, is resisted by the transverse frame members in both the wood and steel ship.

In the wood and steel ship these members are made up of a continuation of members connected together by rivets, dowels or pins. Intermediate members cut between give these members additional stiffness. At the decks, deck beams or between decks cargo beams hold these transverses in place connected by brackets or knees. The transverse members of the concrete ship are continuous and homogeneous pieces, together with their connections, and give increased strength and stiffness without resorting to rivets, bolts, pins or dowels.

Many of the structural parts of wood and steel ships are so cut away to afford connections that the materials are necessarily weakened. At the stern

of the ship strains due to the rudder are resisted by the stiffening effect of increased floor plate, transom plate and additional bracketing to Y to connect stern frame; are equally advantageous in concrete.

Concrete, when not strained beyond the yield point, reinforced with steel possesses a marked degree of elasticity. The so-called stretch of concrete enables one to strain concrete to a point beyond that of the imagination of the earliest designers and builders.

In ship construction the alternating stresses caused by the ship riding on or between waves is taken care of by placing the reinforcings in both the top and bottom of the longitudinal members. The decks, deck beams and side plating must undergo severe strains and as a consequence must be connected with heavy transverse members which submit these strains to the decks and side stringers. The stanchions or posts supporting the deck beams and stiffening the hull in a vertical direction are also used to good advantage at the position of the bulkheads. The above conditions can readily be taken care of by a combination of steel and concrete, provided the concrete is of excellent quality, dense and homogeneous and the steel reinforcings properly disbursed and stressed a moderate amount.

The concrete stresses must naturally be high, otherwise an excessively heavy structure. This is procurable only by concrete capable of safe working stresses of 1,000 pounds to 1,200 pounds square inch in compression. Concrete is noticeably weak in tension and as a result steel is always used to resist tensile stresses. Many recent tests of flat slabs prove the fallacy of the usual assumptions that of the simultaneous occurrence of unit compressive stresses of 500 to 800 pounds per square inch in the concrete and a unit of stress of from 16,000 pounds to 18,000 pounds in the steel. As a matter of fact, the steel stresses are much lower and the concrete stresses in many instances considerably higher.

With concrete of the quality we would use in ship construction we would demand a compressive strength of 4,000 to 5,000 pounds per square inch in thirty days. A concrete of this quality would hardly show indications of cracking or failure under a compressive stress of less than one-third its ultimate strength and a steel stress of 10,000 to 12,000 pounds per square inch. The steel reinforcings would be properly disbursed, preferably small in size and great in number. The additional bond adhesion given by a number of small bars rather than the adhesion of fewer and larger bars, together with the distribution of any possible cracking of a large field, would be to great advantage in the structure.

A concrete of this quality would undoubtedly prevent the percolation of water, but at the same time would not be dampproof and as a consequence it would be advisable to use galvanized reinforcings or metals coated with pure iron. The bond stresses developed would undoubtedly be large and as the sections are thin, corrugated or twisted, steel would be necessary. Alternating stresses with the constant change of direction of the stresses would have to be taken care of by the proper placement of steel.

The difficulties of construction, such as the proper spacing and holding in place of the reinforcements during construction, would demand considerable more skill than is usually practiced. The difficulty of proportioning, mixing and placing (tamping) every batch of concrete to attain identical results cannot be underestimated. The placing of the semi-plastic sticky concrete, together with the profusion of the steel, would demand more labor energy and improved means than is now practiced. Probably pneumatic tamping and rolling, together with the cement gun, for use on thin vertical surfaces, would materially assist in surmounting some of the difficulties. A surface

skin, very dense yet elastic, is quite within the realm of possibilities and is one of the outstanding factors in refined concrete construction, whether it be to resist acid, alkali or sea water.

The "hogging" and "sagging" strains should not induce stresses of more than 900 to 950 pounds per square inch in tension and compression in the concrete in decks, keel, keelsons, etc. The tension in the deck under "hogging" and tension in keel under "sagging" can readily be taken care of by the reinforcings. A gang of 150 men, together with at least six inspectors, could build a vessel of this kind in from sixty to ninety days with the launching ways completed and the materials assembled.

The ship should be at least one month old before launching, as the concrete would have to be sufficiently hardened to withstand the launching strains.

* * *

Architects May Advertise and Still be in Good Standing

THE recent action of the American Institute of Architects removing the ban on advertising for its members, has been given a great deal of publicity in the East and has provoked editorial comments from some of the big metropolitan newspapers. A Philadelphia paper recently printed the following.

Philadelphia architects, as well as others throughout the country, are now privileged to advertise in newspapers and magazines. The idea that advertising is "unethical" has apparently been knocked in the head since the American Institute of Architects has officially lifted the ban on advertising through abolition of its "anti-advertising canon."

The Institute doesn't go so far as to say it advocates advertising by its members; neither does it promulgate any rule against it. The organization leaves the matter of advertising entirely up to the individual member.

In the latest issue of its official journal, the Institute's stand on advertising is made plain in this manner:

"An old tradition will be thought, by many, to have been done away with and a great step forward to have been taken. But while there is no doubt that the institute has taken a new stand, which is indicative of a broader spirit and a more democratic tendency, it must not be thought that the spirit of tradition has been discarded. It was born in a very simple way and was cherished by a group of men who held high professional ideals and who had an instinct for good taste which may not perhaps be so prevalent today as then. The mistake they made, if mistake it was, was to enunciate their belief in a canon of ethics. Good taste cannot be canonized. It may be acquired. It should be a part of any professional equipment. But in expressing the conviction in a canon of ethics which has eventually been transformed, perhaps more or less unconsciously or thoughtlessly, into a recital of punishable offenses, the institute assumed an untenable position.

"At first this did not so appear. Advertising, as a word related almost entirely to business, held a very limited connotation. It related itself almost entirely to space in the newspaper or magazine. But in time, as knowledge, experience and skill were applied to commercial advertising in a successful effort to develop it as a business force, it soon became clear that there were many and various methods of advertising. Originally confined, as a business to the placing of space in newspapers and periodicals, it began slowly to take the form of the writing of copy, the preparation of illustrations, the study of markets, the analysis of business, in order to increase sales and open new markets. Thus, through the operation of an inevitable law, those who dealt in advertising or advertising advice, and who sold that service to business men, began to study other methods and devices.

"They were founded upon psychological observation of influences which determined choice, and through this agency business has been broadened and its standards raised.

"But advertising as a word thus began to stand for a variety of selling forces which could scarcely be enumerated. The architect, obliged in some manner to make his name known, could no more escape the utilization of some form of it than he could escape the use of the post for carrying his letters."

Are Architects Familiar with Stage and Auditorium Requirements of the Modern School?

By EDWIN H. FLAGG*

IN view of the fact that nowadays it is the intention of the promoters of most of the school auditoriums to incorporate therein a practical, adequate and properly equipped stage, a bungled plan by the architect no longer is excusable on the plea that the trustees were any way opposed to making a semi-theater out of their school building.

Many school auditoriums throughout the country built and in operation during the past five years have stages larger and more commodious than the usual "opera house."

And the only change anyone interested in them would make would be to enlarge and improve on what they have, and in no case would they any more go back to the makeshift church hall rostrum style of other days than they would trade their electric lights for candles.

And still when there are real established and proven rules for building stages correctly along certain lines, many architects will continue to squander thousands of dollars of tax-payers' money, concocting impossible annexes (which they call stages) to worse halls (which they term auditoriums) and "doll up" the whole with decorations, columns and pilasters that are disgraceful.

It is as if a wild magazine artist were given a commission to construct a practical automobile and he had it built from sketches made purely to look at without any regard to its practicability.

Upon inquiry we usually learn that each perpetrator of one of these Thespian Mausoleums had some single ray of intelligent purpose to work upon.

In many cases it is a ventilating system, but usually it is a decorative scheme or a style of brick, around which they build their auditorium and stage.

They really believe, however, that they have the auditors' welfare at heart—but instead of intelligently inquiring into matters of acoustics, stage craft and correct lighting, they consciously or unconsciously strive for what they think will show up the best when one steps into the building.

In many cases they cannot even realize what the effect will be when the auditorium is filled.

What view will the person get of the stage when he is seated in the middle of the house and there are people in front of him; or from parts of the balcony; or from a front seat; or where will the orchestra be; or the piano; or the footlights; or the border lights? And what effect one thing will have upon another? And to what purpose will the stage be put? The scenery equipment necessary—how will it be installed and how operated? And how will the stage look after the scenery is installed? And what should be done and what should not be done to the stage so that scenery may be properly and economically handled? And how should the gridiron be constructed and why?

And what certain arrangement of floors, walls, etc., has proven positively essential to assure the best sound and hearing qualities, i. e., acoustics, and what to avoid that invariably makes echoes and interferes with hearing?

* The author is president and general manager of the Edwin H. Flagg Scenic Co., San Francisco and Los Angeles, which has equipped 90 per cent of California school stages, theatres, etc., with scenic and stage requirements.

And above everything else, why do architects still insist upon constructing multiples of worse than useless and costly partitions (ruining the stage) and why do they ceil and plaster the under side of their stage roofs? And why do they plaster their stages at all, and put dressing rooms and stairways and trusses and ventilating shafts where they use up the most vital stage space and leave open useless stage or off-stage space?

To put the stage switchboard in a back corner of the stage is like putting the lighting and starting switch of your automobile under the back seat.

Instead of an auditorium utilizing all available space and seating the maximum number of persons, each having a direct, straight view of the stage, where the artificial lighting is as nearly as possible as unobtrusive as the daylight, controlled so that it floods and diffuses, or concentrates where it is desired, instead of an auditorium where the auditor may hear distinctly all sounds from the stage; instead of these essential things, auditors in a recently completed large, expensive and pretentious school auditorium in a Central California city actually are deprived of seeing the lower part of the stage because of the blundering seating arrangement. At either side or from the balcony the auditor has to sit sideways in his chair and only three-quarters of the available space is utilized, although the architect cannot see where the additional space is. And worse still, in this same auditorium there is no orchestra pit; no place to put a piano; the stage is only 30 inches from the auditorium floor, notwithstanding the fact that a seated person's eye is about 43 inches from the floor. A voice from the stage floats out in this auditorium like a baseball on a diamond and you can follow it around different parts of the hall until it is pitched back with almost as much force as when it left.

This one feature may prove an attraction of the building and people may flock to it to "hear themselves as others hear them" and it become famous as a Hall of Echoes. But on this one questionable qualification will its superiority rest. For otherwise, in spite of the thousands of dollars expended, it is merely a shelter from the elements.

It has what was meant for a stage, which, in spite of almost unsurmountable obstacles, was finally equipped with an outfit of scenery which totally eclipsed the beautiful plaster effects, coves, etc.

It is inconceivable how any architect could so criminally butcher building material and available space in such a manner as to do everything he should not do and nothing he should do and achieve a monstrosity comparable only to an assembly cavern of the pre-historic cliff dwellers.

If an attempt were made to properly reconstruct this auditorium, about the only thing that could be used again would be the lot! But there would be sufficient building material to build probably two structures of its present size.

Lack of space prohibits and the list of technical statistics would to many prove tiresome but the writer, for the good of the profession, will be glad to furnish on request a compilation of the impractical things incorporated in this building together with rules and details for the most practical manner in which it or any other auditorium or stage should be built to assure perfect and continuous satisfaction.

Farms for the Soldiers

By F. W. FITZPATRICK, Architect

THIS may be deemed somewhat premature to talk or write about disbanding our army, what to do with the returning soldiers and all that sort of thing. Heaven grant that all that may come about before we really expect it. But, however and whenever it does come, some provision must be made for that event and it's better to talk about it and have it attended to early than it is to have to hustle through in a half-baked way, as we had to in sending many of them off to war.

Secretary of the Interior Lane is now working on the problem in a broad and statesmanlike manner and it's up to us who have any experience or a foundation for a suggestion to help him all we can.

The returned soldiers cannot all be demobilized at once. To do so would create a labor panic. While they are waiting for demobilization they should be kept actively employed, or, the war purpose being over, demoralization would grow out of idleness.

Now then, the most back-breaking and soul-souring work is the clearing of land by the individual pioneers. True, it made us a sturdy race to have our fathers do it, but me thinks we can find some other way of insuring sturdiness than by inflicting the same kind of spirit-racking labor to all men who go forth pioneering, such is no more necessary than that we should compel our women to sew by hand instead of by machine, or to do anything else the old way just because it is the old way.

My notion and the suggested legislation is that the returning army, not as individuals but as solid, volunteer corps of necessary strength, under military discipline, equipped with most modern labor-saving devices and appliances should clear the lands—the federal, state, school, railway, cut-over timber lands, all that it may be deemed advantageous or necessary to clear—then reclaim, irrigate and otherwise prepare for agricultural purposes those lands, and roads to them, all that sort of thing and done by the troops, everything ready for actual settlement, all the drudgery that used to take years of pioneering to accomplish. The soldiers to be paid adequate wages rather than their army pay. The railroads, state, and other than federal owners would be charged a proper fee for this improvement of their land that would then be ready for sale, or the federal government could acquire those lands, and with what it already has, turn them over to the returning troops for free settlement, if that be deemed expedient. Or, all the lands put up for sale to individuals and bona fide settlers, the government also selling the latter a certain amount of lumber, a cow or two, a horse, equipment to start with and at a reasonable price on long terms.

Canada is doing this very successfully now with its public lands. Why shouldn't we make as great a success of it? We have millions of acres of really waste land; probably six out of ten soldiers returning from war will find the economic conditions such that he will prefer to go to farming than do anything else. His habits of life that have been changed, the outdoors will have an appeal for him; he'll see his office and other former work all successfully done by young women. I tell you, the farm is the proper caper. Let us plan for it now. We can't leave it to individual initiative nor to states nor to army organizations; it is something the government must do. It means the increase of our farming population, it means the great mass of our people leading the happy, independent and contented life you and I preach about, and thereafter we need fear no dire shortage of food, hides, hemp or anything else that grows upon the earth or is the fruit of the earth.

Land Locked Harbors

By W. G. KENT

MY purpose in writing the following article is to present some of the reasons why San Francisco is the principal land-locked harbor on the Pacific Coast. There are several small harbors, but the coast abounds in open roadsteads and inlets both north and south from San Francisco.

San Francisco's harbor is the largest land-locked harbor in the world excepting Sidney, which is a trifle larger. The shores of these two harbors are in many respects much alike, being available for shipping, mercantile and manufacturing purposes. The deepest water in San Francisco is at the county line, where I think the naval base should have been located. It would have been in a much more protected locality.

Going south from San Francisco the first you strike is Monterey Bay, an open roadstead. Several years ago there was a company organized to build a railroad from San Joaquin Valley to this point with the expectation that the government would build a breakwater but for some reason the scheme never materialized.

Next comes Santa Cruz, an open roadstead where a number of vessels have been wrecked. Then Santa Barbara, another open roadstead. Then San Pedro, on which the government spent about one-half million dollars building a breakwater and making of it a satisfactory small harbor. At San Diego is a very nice small land-locked harbor with deep water and a good entrance. Many claim that its climate is the finest in the world, superior even to that of Italy and located at the Mexican border, which brings us into Mexico, with Mazatlan, Guyamas and a few small inlets, but all open roadsteads, until you reach Acapulco, a small land-locked harbor, mostly surrounded by high mountains. The entrance is narrow but deep water prevails. Most of the steamers plying between San Francisco and Panama stop there and take on their beef, cattle and stores. Continuing on for some distance you come to Panama, which is a large open roadstead. Most of these places I have visited personally.

GOING NORTH

Going north from San Francisco we find first Drake's Bay, Tennessee Cove, where several years ago the mail steamer Tennessee was wrecked and the little cove was named after it. Then follow Tomales Bay, Bodega, Noyo River, San Benito, Fort Bragg, Eureka and Humboldt Bay, all of which are land-locked harbors, but very dangerous bars. San Benito, Coos Bay, land-locked, has a good entrance and deep water. Next you come to the Columbia river, with Astoria at its entrance and Portland further up the river. Columbia river has a very dangerous bar for going in and going out. Many large and valuable vessels have been wrecked there. Next you arrive at Puget Sound, a beautiful body of deep water possessing a splendid entrance. Unfortunately a large portion of it is surrounded by high bluffs, which come right down to the water's edge, making it unavailable for commercial purposes without an unwarranted expense. The Bremerton Navy Yard is located in the finest spot on the Sound. It is a large cove, deep water and well protected. The government has an immense dry dock there. Also Vancouver has a small harbor, land-locked, and deep water. Next we come to the British possessions, where we find Victoria harbor,

nice but small, with deep water and a fine entrance; also Esquimalt harbor, small, land-locked, and with a good entrance. The government has a dry dock there. There is also Vancouver with a small, deep water harbor and ample entrance. Next we come to Alaska, with Juneau, Skagway, Sitka, Nome and several small inlets. The government bought Alaska, paying $7,000,000 for it. Secretary of the Interior Seward was sent out from Washington to investigate before the purchase was completed and returned recommending the purchase. The people at large made a great howl about it. They wanted to know what was going to be done with that mountain of ice. Congress adopted Mr. Seward's report and bought the territory, and old-timers will recall that ten times seven millions have been taken out of it. During the summer season you can raise as nice fruit and vegetables there as anywhere in the world.

* * *

Contrast Salaries Paid by Cities to Their Engineers With Those Paid by Schwab to His Engineers

DEMOCRATIC governments are notorious for not paying adequate salaries to the employees having the greatest responsibility—the planners and managers. They willingly—often too willingly—raise the wages of employees in the ranks, while remaining obdurate to requests for higher salaries for men in professional and managerial positions. Robert Hoffman, Commissioner of Engineering of Cleveland, has said:

> Unfortunately, the personnel of the Sewer Department has changed frequently from one cause or another so that but few men have had an opportunity to become thoroughly acquainted with local conditions or well versed in the science of sewer design. Salaries should be adjusted from time to time so as to make an inducement for competent engineers to remain in the employ of the city as well as to make the securing of their services possible. Engineers as a class should be interested in this phase of the problem, as it means proper recognition of the profession and adequate reward for most useful service.

This condition is typical and deplorable. If it is ever to be remedied, Mr. Hoffman's suggestion must be acted upon. Engineers as a class must interest themselves in the problem of securing adequate salaries for engineers and managers employed by cities. Even though they run the risk of being charged with working for a selfish purpose, engineers should undertake to convince city councils and the public that it pays a city, in the long run, to employ the best of engineers and executives, and that such men can be retained indefinitely only by those who pay them adequately. Adequately does not mean the least that such men will accept for temporary employment, but enough to make a city position as attractive as a position with a prosperous and well managed company.

The public is at present well informed about that great engineering executive and manufacturer, Schwab. Let the public also know something about Schwab's practice as to the salaries of his engineers and managers. No city is likely ever to duplicate the salary that Schwab pays to Grace, the president of the Bethlehem Steel Company—a million dollars a year—but every one in authority in every city should be told that Grace is an engineer, and that Schwab's success as a manager rests largely upon the liberal compensation that he gives his ablest engineers and managers.—Engineering and Contracting.

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Workmen's Homes from the Community Standpoint

Civic bodies throughout the country are manifesting great concern in the matter of properly housing workmen in local manufacturing plants. It is important that such interest be properly directed. Chambers of Commerce, boards of trade and manufacturers' organizations are giving earnest thought to this subject, and many of these bodies are planning methods by which homes may be provided for operatives coming daily into already overcrowded cities.

Housing of workmen is a vital question in every industrial center. Many cities have organized housing committees. Local manufacturers are demanding relief from expensive labor turnover. In some communities the housing question has been stressed by the sudden expansion of Government arsenals, where from five to eight times as many men are employed in the factories as before the war. In such sections, and for that matter in every community where war supplies are being manufactured, there exists a strong, impelling patriotic motive for civic bodies to put forth their best efforts to properly house the labor that is engaged on war work.

The national industrial housing shortage has become so acute that in considering the location of a new factory the first question asked is relative to housing possibilities. The community which can offer good housing facilities not only attracts industry but will be able to maintain undiminished industrial activity long after the war has ceased to be.

The value of large payrolls is thoroughly appreciated by civic bodies. Yet it must be realized that the value of a payroll to any community is largely dependent upon the proportion of well housed married men among the industrial population. Such men, with their families, spend or bank their entire receipts locally. A poorly housed working force will be found to consist largely of single men of the transient type or married men boarding near the plant. These men send a large pro-

portion of their wages to families located in some distant city. From the community standpoint well-planned industrial housing is a paying investment in that it carries with it a financial activity which is beneficial to all local business.

Stimulation of local interest, which will result in the actual provision of housing, can be carried out only through proper methodical investigation. Local support for a housing programme can best be gained by civic bodies presenting the proposition in an attractive, appealing, and forceful manner to the heads of industries most directly affected or those which are likely to become affected.

The ultimate benefit to the community in establishing a stable, well housed working population is so great and of such value that every effort should be made to meet the housing shortage through local means. The issue should be faced and prompt steps taken to satisfy an immediate need.

Another fact to be considered is after-war decentralization. Extensive plans are already under way to render suburban and farm life more attractive to the workman. Farm and factory are to bid against each other for labor. Production is to be at its most highly developed stage, and labor, now more than ever, is at once the servant and master of production.

Our industrial centers depend upon factory production as to the commercial foundation for the community structure, so they must look to the keystone of that foundation—labor. The workman must be housed attractively and honestly if in the years to come many of our present thriving industrial centers shall not collapse.

Noble Foster Hoggson.

The Profession of Landscape Architecture

Landscape architecture is primarily a fine art, and as such its most important function is to create and preserve beauty in the efficient adaptation of land to human service, whether in the functional planning of cities or in the development or preservation of the broader natural scenery of the country. In its relation to the location of buildings and the treatment of their surroundings it requires a familiarity with certain parts of the technical field of architecture; but its materials are mainly included within the fields of geology, forestry, horticulture, and civil engineering, to which it is related in much the same manner that architecture is related to structural engineering and other similar technical subjects.

With the widespread general realization of our need for beauty as well as efficiency in land adapted to our use —beauty not merely as a luxury but as a practical necessity and as much a matter of course as practical efficiency —has come a steadily growing demand for men professionally trained in the production of this beauty wherever called on to fit land areas to human service. In normal times this country offers a large opportunity for trained men as assistants in the offices of landscape architects, as park superintendents, city foresters, etc., and as landscape architects in private practice or public employ.

At this period of our war emergency, the economic value of the landscape architect's training in the large-scale adaptation of land for use has been demonstrated more clearly than ever before,—in residential developments for industrial workers and in the laying-out of military and naval camps and cantonments; and our Government has already officially recognized the usefulness of the landscape architect in such work. War-time opportunities for the city planning services of the landscape architect were outlined in Mr. Cheney's article in the June Architect and Engineer. At the close of the war, the profession of landscape architecture in its civic aspects is almost certain to receive an unprecedented impetus, with a corresponding demand for trained practitioners.

Seattle Provides Housing Facilities

Seattle has arranged for the building of 3700 new homes, all of which will be under way before January 1, as a means of settling its housing problem growing out of the thousands of ship plant workers that have been attracted to the Northwest metropolis.

All of the 3700 homes will be built by private capital, but the Chamber of Commerce has established a bureau to help owners of vacant lots finance their work and also to help get material and labor. None of the houses will cost less than $1500 and the total investment, with the lots included, will exceed $10,000,000.

Death of C. T. Ryland, Architect

Mr. C. T. Ryland, at one time a practicing architect in San Francisco and San Jose, died October 12 at the Franklin hospital, San Francisco. He was 50 years old and a graduate of the University of Santa Clara. Mr. Ryland was a grandson of California's first Governor, the Hon. Peter H. Burnett, and a son of the late Judge C. T. Ryland of San Jose. He is survived by a widow.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. W. D. Coates, Jr., member of the firm of Coates & Traver, architects of Fresno, Cal., has accepted a position as assistant to the department head of the Aberthaw Construction Company, builders of the new Liberty Shipyards in Alameda. In the absence of Mr. Coates, Mr. Harrison B. Traver will be in charge of the firm's office in the Rowell building, Fresno.

Mr. Ernest V. Price, of Whitehouse & Price, architects, Spokane, has been called to Washington, D. C., to do construction work under the surgeon general during the period of the war. The business of the concern will be conducted by Mr. Whitehouse until Mr. Price's return.

Mr. Altee Ayers, state architect of Texas was tendered a luncheon by the Washington State Chapter of the American Institute of Architects at Seattle on September 3rd. Mr. Ayers has been practicing in Texas for the past twenty years.

Mr. Reginald D. Johnson, architect, of Pasadena, son of Rt. Rev. Joseph H. Johnson, bishop of the diocese of Los Angeles, of the Protestant Episcopal Church, has enlisted in the heavy artillery branch of the U. S. army.

Mr. R. F. Foster, county engineer of Douglas county, Washington, was disappointed in his efforts to get into the engineer corps of the army. His physical and technical examinations were satisfactory but he failed in the color test.

Mr. M. J. Beezer, architect, member of the firm of Beezer Brothers, Seaboard building, Seattle, is one of the volunteers for shipyard work during the acute shortage of labor. His brother Louis is handling the practice of the firm.

Mr. W. V. Marshall, member of the architectural firm of McIvor, Cohagen & Marshall, Billings, and Great Falls, Montana, was recently made a lieutenant at the officers' training school at Camp Lewis, Washington.

Mr. F. A. Johnson, chief draftsman for Mr. H. J. Brunnier, C. E., Sharon building, San Francisco, left October 2d for Camp Taylor in Kentucky, where he has gone into training for field artillery work in France.

Mr. Loring P. Rixford, San Francisco architect, is designing Red Cross hospitals in France. Mr. Rixford's grandmother, Mrs. Elvira Pickering Rixford of San Francisco, recently celebrated her one-hundredth birthday.

Mr. Charles W. Gompertz of the General Contractors' Association, San Francisco, has been appointed a member of the Executive Board, National Federation of Building Industries.

Mr. V. W. Voorhees, Seattle architect, and family recently made an extended automobile tour along the Pacific coast, visiting portions of Mexico.

Mr. Frank H. Morrison, architect of Dallas, Oregon, has secured an appointment as quartermaster of the new steamship Salmon, built at Portland.

How Weeks & Day Learned the News

On two occasions it has been the pleasant privilege of The Architect and Engineer to be the first to advise Mr. Charles Peter Weeks, the well-known San Francisco architect, of his good fortune in winning a competition. The first time was five years ago, when the jury awarded Mr. Weeks first prize for his plans of the Alameda County Infirmary group. This was a million dollar proposition, with numerous other architects competing for final honors.

The second instance was the recent Capitol Extension building competition, the jury of which awarded first prize to the firm of Weeks & Day, who had as their competitors in the final stage of the contest such well-known architects as Bliss & Faville, and Ward & Blohme of San Francisco; Hewitt, Ash & Curtis of Philadelphia; Adolf Scherrer of Indianapolis; James Gamble Rogers, Dennison & Hirons and Tracy and Swartwout of New York.

When Mr. Weeks was advised of his success he was loath to believe the news, and after the message had been conveyed to him—some minutes later—he called the editor a second time to make sure it was not a joke.

The Capitol Extension buildings will cost $3,000,000 and will be built after the war. Weeks & Day will receive a commission of 6 per cent, which is a comfortable fortune in itself—$180,000! A prize worth winning.

University Appointees

Brief announcement was made last month of the appointment of Mr. Arthur Brown, Jr., to the chair of Professor of Architectural Design and Theory of Architecture in the University of California. In connection with this and one other appointment the Regents supplemented the announcement with the following:

Mr. Arthur Brown, Jr., is a graduate of the Ecole des Beaux Arts, Paris, holding a diploma "des Architectes" from the French government. He was last year Professor of Architecture at Harvard University. He is a member of the firm of Bakewell & Brown, architects of the Berkeley City Hall, monument to Commodore Sloat, San Francisco City Hall, Horticulture Building, Panama-Pacific International Exposition, and other well-known buildings. The San Francisco Chapter of American Institute of Architects, the Beaux Arts Society, the Societe des Architectes avec Diplomes par le Gouvernement Francais, and the Engineer's Club of San Francisco claim him as a member.

Dr. Ian B. Stoughton-Holborn, appointed Lecturer in Art and Architecture in the Department of Drawing and Art and in the Department of Architecture, has also accepted a Lectureship in the Extension Division of the University and will devote most of his time to lecture tours in various parts of the state. He has been Extension Lecturer for Cambridge and Oxford Universities, England, and is also a Chautauqua lecturer of renown. Dr. Holborn survived the disaster to the Lusitania on May 7, 1916, when he received injuries which incapacitated him for active service with the British armies.

Los Angeles City Hall Tower to Be Cut Down

Sixty feet of the upper portion of the brick tower on the Los Angeles city hall, estimated to weigh 750 tons, will be removed as a measure of public safety. The tower is 185 feet high from the sidewalk level to the peak of the roof, and it is constructed entirely of masonry, being faced with pressed brick with red sandstone trimmings. It is a very fine example of Romanesque architecture and all who appreciate good architecture will regret to see any portion of it removed.

Pieces have fallen from the upper portions of the tower frequently, however, menacing the lives of pedestrians and the board of public works decided after a portion of the cornice fell a few days ago to take down as much of it as might be necessary to remove all menace to the public. Fortunately the tower is so designed that the upper sixty feet can be removed without detracting from its appearance architecturally.

Architects Co-operate for More Homes

The Washington State Chapter, A. I. A., Mr. G. C. Field, secretary, is co-operating with the More Homes Bureau of the Chamber of Commerce in Seattle, and has prepared sketches and working drawings of thirty or thirty-five types of houses ranging in size from three to six rooms. It is intended that these plans shall be used in connection with the More Homes Bureau's housing campaign in Seattle. The Chapter has also installed a large exhibit of small house work at the headquarters of the Bureau, where the plans are on view. The United States Housing Corporation has permitted the use of plans prepared by Mr. A. H. Albertson for the housing developments at the Puget Sound Navy Yard.

Will Direct Coast Housing

Mr. Mark C. Cohn of San Francisco, executive secretary of the California State Housing Commission, has been appointed Pacific Coast director of registration under the United States Bureau of Housing and Transportation, of which Mr. W. A. McClatchey of Washington, D. C., is chief. Mr. Cohn will have immediate supervision of the problems of housing war workers on the Pacific Coast. He was formerly chief clerk of the Los Angeles city building department, receiving his appointment under the state housing commission in January, 1916.

Architect Seeks Damages

Mr. E. J. Vogel of San Francisco, architect, who designed the Fife building following the earthquake and fire, recently filed a suit for $20,000 damages against Mr. W. H. Stewart, an inspector employed by a shipbuilding company, alleging slander. According to Mr. Vogel's complaint, he worked as an assistant ship inspector and Stewart said he was "not adapted to the position or to office work."

Residence and Apartments

Mr. Henry C. Smith, architect in the Humboldt Bank building, San Francisco, has made plans for a three-story frame and stucco apartment house of twenty-one apartments, to be built at Pine and Stockton streets, San Francisco, at an estimated cost of $50,000. Mr. Smith is also making plans for a $15,000 residence in Marin county.

Flats and Sanitarium

Mr. W. C. Falch, formerly of Falch & Knoll, Hearst building, San Francisco, has prepared plans for remodeling a three-story frame flat building on Duboce avenue and Market street, San Francisco. Mr. Falch has also completed drawings for a private sanitarium in San Mateo county.

Many Oakland Cottages

The Oakland Realty Board recently made an extensive canvass of the residence districts and reported to the government authorities that there were less than one hundred vacant dwellings. Many of these, however, are in such deplorable condition that they are uninhabitable. The Board has announced that at least one thousand new homes must be built if the large number of shipbuilders who are expected to come to the city within the next three months are to be accommodated.

Building permits have lately been taken out aggregating $250,000. Mr. R. C. Hillen of Alameda has started construction of cottages which will cost $100,000 and a contract has been let to Mr. Edward Olsen, 264 Mather street, Oakland, for forty one-story frame dwellings, each to contain five rooms and sleeping porch and cost approximately $2500.

Mr. Earl B. Bertz's New Work

Mr. Earl B. Bertz, formerly with Mr. Albert Farr, well-known San Francisco architect, and recently practicing the profession of architecture independently, has accepted a position for the period of the war as architect for all construction work on the Pacific coast of the United Cigar Stores Company. Mr. Bertz has temporarily closed his office in the Foxcroft building, and is now at 555 Howard street, the San Francisco headquarters of the United Cigar Stores Company.

Much Harbor Work Planned

The government having decided that development of the San Francisco harbor front is essential to the winning of the war, the State Engineering Department under Mr. Frank G. White has a large force at work on plans for new piers, extensions to existing piers, changes to wharves and additions to various buildings. All this work will be done by contract and bids will be called for shortly. A contract has just been let to Ruegg Bros. to build a two-story addition to the Ferry Postoffice building.

Concrete Private Garage

Mr. Arthur G. Scholtz, architect in the Phelan building, San Francisco, has completed plans for a one-story reinforced concrete private garage to be built on Guerrero street, near Twentieth. A feature of the building will be a roof garden, with pergola, which will serve as a playground for children.

Office Building Addition

Mr. Leland S. Rossener, engineer in the Insurance Exchange building, San Francisco, who has designed practically all the buildings for the Moore Shipbuilding Company in Oakland, is preparing plans for a two-story extension to the Moore office building, 60x80, and which will cost about $12,000.

Owl Drug Company to Build

Preliminary plans have been prepared by Messrs. Ward & Blohme, Alaska Commercial building, San Francisco, for a four-story reinforced concrete factory, warehouse and office building to be erected at Eighth and Howard streets, San Francisco, for the Owl Drug Company. The building will cost approximately $200,000. Only one wing of the building will probably be built now.

Lakeshore Highland Homes

Plans for four more attractive homes on Mandana boulevard, Oakland, for the Walter H. Leimert Company, have been prepared by Mr. William C. Hays, First National Bank building, San Francisco. These houses are to be plaster and brick veneer and will cost between $4000 and $5000 each.

Pittsburg Moving Picture Theatre

Mr. A. W. Cornelius, architect in the Merchants National Bank building, San Francisco, is preparing plans for a moving picture theatre and store building to be built in Pittsburg, Contra Costa county, for Messrs. Enea Bros., present owners of the Palace Theatre.

Building Many Barracks

Eighteen two-story frame barracks, a mess hall, 80x250, and an administration building, are being completed on the University Campus, Berkeley, for the Students' Training Corps. Plans were prepared by Messrs. Bakewell & Brown. More than $200,000 is being expended on the work.

Another Unit to Factory

Mr. Edward T. Foulkes, architect in the Crocker building, San Francisco, has completed plans for a second unit to the Moore-Scott Motor Works in West Berkeley. The building will be 125 feet square, one-story and will cost $40,000. Plans for a third unit are being prepared.

Santa Cruz Cannery

Mr. T. Ronneberg, engineer in the Crocker building, San Francisco, has prepared plans for a two-story frame canning factory, 40x160, to be built on the Municipal Wharf, Santa Cruz, at a cost of $25,000, for the Santa Cruz Canning Corporation.

Addition to Bakery

Plans have been completed by Mr. Perseo Righetti, architect in the Phelan building, San Francisco, for a $40,000 extension to the California Baking Company's plant on Fillmore street, San Francisco. Construction will be of reinforced concrete.

Alterations to Hotel

Messrs. Reid Bros., architects in the California-Pacific building, San Francisco, have prepared plans for alterations to the hotel at Bush and Jones streets, the property of Mr. W. J. Rogers. The improvements will cost close to $40,000.

Will Approve Building Plans

The non-war construction committee of the San Francisco division of the State Council of Defense is composed of Mr. Thomas Jennings, chairman, 100 Howard street; Mr. A. S. Baldwin, 318 Kearny street; Mr. F. A. Somers, 485 California street; Mr. George U. Hind, 230 California street; Mr. Gustave Brenner, Monadnock building; Mr. John P. Horgan, Board of Works, City Hall; Mr. J. J. Coefield, 1338 Fifteenth avenue.

The War Industries Board has ordered the State Council of Defense to act as its representative in connection with all non-war construction priorities in the State, and no permits will be issued by the board on applications that are not approved by the county and state committees.

Vallejo School Building

Mr. Geo. W. Kelham is preparing plans for a part one and part two-story Italian Renaissance school house to be built in the new Government housing district, Vallejo. The building will have four rooms and an assembly hall with moving picture equipment, and is designed so additional wings may be added as needed. A terra cotta tile roof will be used. Approximately $25,000 will be expended.

Rolph Shipbuilding Plant

Plans for the Rolph Shipbuilding plant in Alameda have been prepared by Mr. Howard C. Holmes, C. E., 112 Market street, San Francisco, and not by Mr. John Reid, Jr., as announced in this magazine last month. Mr. Reid has made the plans for a warehouse and office building only, the balance of the work being in charge of Mr. Holmes.

Addition to Car Shop

Mr. C. W. McCall, Central Bank building, Oakland, has prepared plans for a two-story frame addition to the East Oakland car shops for the Oakland Traction Company. The building is for women conductors, whom the company is planning to employ.

Addition to Berkeley Factory

Plans have been prepared and a contract awarded for another unit to Peet Bros.' soap factory in West Berkeley. Construction will be brick, four stories, and the cost will approximate $150,000. Mr. R. S. Chew of San Francisco is the engineer.

Stockton Warehouse

Plans are being prepared for a five-story reinforced concrete warehouse, 80x160, to be built in Stockton for a client of Mr. Clay N. Burrell, architect in the Albany Block, Oakland.

Architect Weeks' Sons in Service

Both sons of Mr. William H. Weeks, the San Francisco architect, who is well known throughout the state as a designer of school houses, are in the service of Uncle Sam. Harold Weeks, former major of cadets in the Oakland High school, is in France recovering from injuries received in one of the first American drives in the Marne. Harold is with the 161st Infantry. He is so enthusiastic about the war and his letters are so replete with detail that the censor has to work overtime. One of his recent letters was minus a page and a half that the censor had disposed of. Mr. Weeks' other son, Foster, is a first sergeant in charge of a detachment of wounded at Base Hospital No. 30.

Proper Housing Vital to Nation

The Council of National Defense makes this statement in a circular sent to the several State Councils of Defense:

"Housing and war work are vitally connected. A man who raises crops, turns shells, or builds ships must have a place in which to live. His health and efficiency are directly dependent upon housing conditions. Adequate and satisfactory housing is thus one of the outstanding needs of the day."

Charles A. Miller

Mr. Charles A. Miller, city engineer of Oregon City, Oregon, died recently of heart failure at his home in that city. He helped to construct the Tacoma street railways and later did engineering work in Salem, Oregon. Twenty-five years ago he came to Oregon City as engineer in charge of construction of the Willamette Falls Railway and upon completion of the line served as its superintendent for twenty-two years.

Contract for Government Warehouses

Messrs. Lange & Bergstrom, Sharon building, San Francisco, have been awarded the contract on percentage to build a group of warehouses, barracks, cottages, etc., at the U. S. government arsenal, Benicia. There is an appropriation of $110,000 for the improvements.

Hospital Changes

Mr. Lewis P. Hobart has prepared plans for some extensive alterations to the University of California hospital, San Francisco. Bids for the work have been taken.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

Government in Complete Control of Building Industry

GOVERNMENT sanction of essential building construction is now mandatory and no new building is permitted without a Federal permit. Priority committees have been appointed in every county and regional advisers have been named to direct their operations. The director of the San Francisco office, which is in the Ferry building, is Mr. L. E. W. Pioda, who has a staff of volunteer workers that is kept busy handling local applications and passing on the reports of the county committees.

Regarding the permit plan, the committee on public information at Washington has sent out the following announcement:

The war industries board has asked the 48 state councils of defense and the 5000 county councils of defense throughout the country to act for the board that all building which is not absolutely necessary may be stopped at once, the committee said.

In cases where permits are required, the local contractor may first obtain the approval of his county council of defense before the permit may be issued.

The procedure in limiting building construction, throughout the country, worked out between the council of national defense and the war industries board, is as follows:

Any person interested in a construction project must apply, with a full statement of the facts under oath, to the appropriate local representative of the various state councils of defense.

This representative of the state council will investigate the necessity of the proposed construction and transmit recommendations to the state council for review.

The state council will review the case, and, if it decides in favor of the construction, it will at once send its recommendation, with a full statement of all the facts, to the nonwar construction section of the priorities division of the war industries board. The nonwar construction section will grant or withhold the permit and so notify the state council of defense, and the individual concerned.

If the state council decides against the proposed construction, it will notify the person concerned that his project has been disapproved.

The war industries board will inform all persons applying directly to it that they must first take up their projects with the appropriate local representative of the state council of defense.

The ability of the war industries board to enforce this whole plan rests upon the fact that it controls priorities and has also secured from the manufacturers of building materials a pledge not to supply materials for projects which are not authorized under the regulations of the war industries board.

As the result of the ruling by the war industries board, no permits will be issued for buildings, with the exception of a few specified classes, unless a permit is first authorized by the war industries board. These permits will be only issued where it is clearly shown that the building meets an immediate need.

The ruling does not apply to buildings which were substantially under way prior to September 3. An exception is also made in the case of farm buildings costing not to exceed $2,500. Exceptions to the rule are also found in work done by the navy or war department, the United States Shipping Board, the Bureau of Industrial Housing, the Department of Labor, the United States Housing Corporation, the United States railway administration, buildings necessary for the operation of various mines, and such public highway improvements and street pavements as have been approved in writing by the United States Highway Council.

Repairs and alterations to existing buildings, not exceeding $2,500 in any instance, are also exempt from the ruling.

Ability of the board to enforce the order rests on the fact that it controls priorities and also has obtained from the manufacturers a pledge not to supply materials for building projects which are not authorized under the regulations of the board.

State Officials to Work for Uncle Sam

Uncle Sam will take some of California's best engineers who have been in the employ of the state for the past year or more. The following have taken examinations and are recommended to fill positions with titles as given:

California Highway Commission—Mr. A. J. Wagner, construction engineer, Captain; Mr. R. E. Pierce, civil engineer, First Lieutenant; Mr. R. R. Hatchett, civil engineer, First Lieutenant; Mr. H. C. Briley, civil engineer, First Lieutenant.

State Department of Engineering—Mr. C. H. Kromer, structural engineer, Captain; Mr. C. K. Aldrich, specification writer, First Lieutenant; Mr. G. J. Adams, architectural draftsman, officers' training school for artillerymen.

Home for Oakland Boiler Workers

A four-story Class "A" steel frame and brick club building and dormitory is to be built on Franklin street, near Fourteenth, Oakland, by the Oakland Boiler Workers and Iron Shipbuilders Temple Association. Building is to be 75x150, and will contain a gymnasium, swimming tank, auditorium, clubrooms, dormitories and three stores. Permission to construct this building has been obtained from the government. Approximately $200,000 will be expended. No architect has been selected as yet.

Nurses to Have Home

A new home is to be built for the nurses of San Francisco. Dr. Helen P. Criswell, 281 Edgewood avenue, San Francisco, is chairman of the Building committee which has raised about $40,000 for the improvements.

Fatal Accident to Architect's Son

Much sympathy goes out to Mr. C. W. Dickey, Oakland architect, whose 19-year-old son recently lost his life following a premature boiler explosion. Young Dickey was a boy of much promise.

Death of Thos J. Welsh

The death of Mr. Thos. J. Welsh, senior member of the firm of Welsh & Carey, architects, with offices in the Merchants National Bank building, San Francisco, occurred October 18, after a protracted illness of some years, following a paralytic stroke. Mr. Welsh was one of the best-known old-time architects in San Francisco and had been identified with the planning of many notable buildings, including St. Mary's cathedral, Girls' High School, Supreme Court building (destroyed by fire in 1906), Commercial building on California street, Paulist Church (old St. Mary's) at California and Dupont streets; the Buckley building, Spear and Market streets, and the Italian American bank. Mr. Welsh was for a number of years, prior to the earthquake and fire, architect for the San Francisco Board of Education.

In 1904 he became associated with Mr. John W. Carey, who, since Mr. Welsh's illness, has been in entire charge of the business.

Mr. Welsh was 77 years old. He came to San Francisco in the early fifties. In his youth he was an athlete of considerable local repute, being one of the charter members of the old California Athletic Club and a member of the Olympic Club for 39 years. He was a member of the Knights of Columbus, San Francisco Chapter, A. I. A., and the Knights of St. Patrick.

COMMUNICATIONS

The New Bush Terminal Building

Editor The Architect & Engineer of California:

If you print any matter foreign to California you will doubtless be interested in the New Bush Terminal building, Forty-second street, New York City, a thirty-story structure, planned to house the International Buyers Club. This club is composed of the buyers who (first of all) patronize the manufacturers who occupy space in the Bush Terminal's Brooklyn plant and who show their goods in the new building. Other manufacturers beside those actually using the accommodations offered by the company will be permitted to take space. The buyers are housed right in the building and the accommodations for their housing are very complete. They will have the same service as would be furnished in a private club.

The building, architecturally, which would of course be the thing your readers would be most interested in, is very dignified and beautiful. The interior is Gothic in design, and the furnishings are in keeping. Very sincerely yours,

HARRIET SISSON GILLESPIE.

Woman's City Club, 23 Park Ave., New York City.

Business or No Business, He Must Have The Architect & Engineer

Editor The Architect & Engineer of California:

I just came across your bill and not being able to remember sending you the money, I am inclosing check, and if I have sent it, you can give me credit for another year, for I want your magazine, whether there is any architectural business or not. Just now I have nothing on the board, except a job or two that will go on when the war is won, so I am giving most of my time to my farm (prunes and almonds), which I fortunately started some years ago. I cannot give up my old business entirely, however, so will look for your Architect and Engineer each month, to keep up my interest in the profession. Just now I remain,

Yours for the winning of the war,

L. M. TURTON.

P. S.—Probably you know that my partner in Santa Rosa, Mr. F. W. Herbert, was called out with his company at the very beginning of the war, so the office in Santa Rosa has been closed for more than a year.

L. M. T.

Architects Are Inarticulate

Editor The Architect and Engineer of California:

Mr. Wenderoth's article in your September issue is not an answer to the July "Ferment" story, but an extension and endorsement of it.

Both articles are full of fallacies mixed up with a few misinterpreted facts and both vitiated by false assumptions about architects and their ways that I think need to be shown up.

The main trouble with our architects is that they are inarticulate—someone should say something. B. J. S. CAHILL.

[EDITOR'S NOTE.—Mr. Charles Cressey, architect of San Diego, will answer both articles in the November Architect and Engineer.]

Architect Reed Returns

Captain Walter D. Reed, Oakland architect, who has been in France for a year as one of General Pershing's staff, has been appointed assistant chief of staff and intelligence officer of the Thirteenth Division, U. S. Army, Camp Lewis, Tacoma, Wash. Captain Reed arrived at the camp from overseas October 21.

Will Show Work of Woman Architect

The work of Miss Julia Morgan of San Francisco, and one of the most successful women architects in the United States, will be shown in the November Architect and Engineer. The number will be unique in that it will be the first architectural magazine to devote an entire issue to the accomplishments of a woman architect.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Architect Discourages General Bidding in These Days of High Prices and Shortage of Labor

MR. H. E. HEWITT, a member of the Illinois Society of Architects, has declared himself in favor of cost plus contracts or segregated contracts in preference to lump bids or general contracts awarded on a competitive basis. His reasons are published in the Monthly Bulletin issued by the society and are given herewith in full:

"Anyone who has tried to let general contracts on competitive bids under present conditions knows that it is practically impossible to do so and that it is even less desirable. Two methods then remain. First: Letting separate contracts for each branch of the work on a unit price basis. Second: Letting a general contract for the entire work on cost plus percentage basis. My own experience has been largely with the latter method and it is the one I wish to suggest.

"In considering this procedure, it is necessary to presuppose a contractor with the following qualifications: (1) Integrity. (2) Financial resources. (3) Buying power. (4) Organization. (5) Executive ability. Some of these are interdependent, but in general they represent the necessaries of the successful contractor, regardless of the basis of his contracts.

"The detailed comparison of the two methods is beyond the scope of this letter and I shall content myself with some arguments for method No. 2 and let some one else argue for No. 1 if they will.

"The question is largely one of buying power—I shall argue that a building can be more cheaply erected (and generally better and quicker) by a general contractor having the qualifications enumerated above, than by a multitude of sub-contractors whose work is co-ordinated by the architect. In the latter case the architect practically becomes the general contractor, and as architecture is practiced today in this country, he cannot do so to the advantage of his client. The principal reason is that he has no buying power. The statement to a client that the general contractor method is more expensive because he pays the general contractor a profit in addition to the profits of the sub-contractor, sounds plausible, but as a matter of fact, the general contractor can buy and sub-let so much cheaper than the architect, that he saves not only his own ten per cent, but in most cases considerably more.

"Sub-contractors prefer to figure with general contractors rather than with architects and generally will give a better price to the contractor than to the architect. There are several reasons for this—he is dealing directly with the party who will pay him the money and is not dependent on the architect for certificates or bothered with his too often unbusinesslike methods. The alert general contractor, realizing the advantages to his reputation with those of whom he buys that prompt payment will bring, does not wait until he receives his money from the owner, but discounts his bills and sees that payments on sub-contracts are promptly made. He thus gains for himself a reputation such that he can

command the lowest cash prices and a preference in time of delivery or completion over other current work likely to bring slower payment. Further than this, he calls in the lowest bidder on a sub-contract, goes over with him the work to be performed, and is in a position to point out where savings can be made and often gets a substantial reduction on the lowest bid. He becomes a keen buyer, because that is his chief concern. To do all this requires well developed and experienced business ability and a well equipped organization.

"The advantage in time required to build has been alluded to above. There is still another advantage and one that cannot be too much emphasized. The element of divided interest is entirely eliminated. The relation of owner, contractor and architect becomes one of co-operation solely—each is striving for the best result at minimum cost and the harmony that prevails assures a successful accomplishment.

"It may seem to some that I am unwarranted in taking up the general contractor's cause, and advocating the elimination of a portion of the architect's services which he performs usually for an increased fee. To those I would say that I am only advocating that which would seem to promote the best interests of the client; and that the elimination of such portions of the architect's services as he is not qualified to perform, is a direct gain to the profession, in that it will help to place us in a better position in the esteem of our fellow men."

Contractor's Right to Withdraw Bid

The question of a contractor's right to withdraw a bid on the claim that a mistake had been made in compiling it has frequently been raised and the courts have generally held that in cases where the error is manifest this right cannot be denied. A recent decision upholding this right was handed down by the appellate division of the supreme court of the state of New York. A contractor, submitting a proposal for the erection of a school building in the city of Syracuse, deposited with it a certified check for $9000. The bids were opened on December 26, 1916. The bid of the contractor in question was $179,969. The next bid was $200,000. The lowest bidder at once realized that he had made a mistake in his bid, but did not discover the error until December 28, when he found that two items for plastering and carpentry work had been listed as $1,457 and $2,854, instead of $14,570 and $28,540. He at once served notice of withdrawal of his bid, but the board of contract refused to permit such withdrawal. The contractor at once brought an action to annul the bid and to enjoin the city of Syracuse from declaring forfeited the check for $9000. The board of contract, however, declared the check forfeited, rejected all the other bids and re-advertised for new bids.

The appellate division, fourth department of the supreme court of New York, held that that board of contract knew that an error had been made before any action had been taken in awarding the contract, that the contractor was entitled to have the bid annulled, and his $9,000 returned. The court also held that the board of contract was not necessarily required to let the contract to the lowest bidder; that it was within its discretion to award the contract to any bidder, regardless of the amount bid, if, under the circumstances, the interests of the city would thus be best served; that, therefore, the contract might have been awarded to the next lowest bidder; and that it was unnecessary to re-advertise for new bids.

When the bids were re-advertised the lowest one was $210,000. The city claimed damages in the amount of $10,000. This claim was disallowed.

The Eighth Wonder of the World—Hog Island

On September 20, 1917, Hog Island was but a barren tract of waste land—today it is the Eighth Wonder of the World. On what was but a brush-grown tract last year are being built the ships that will carry soldiers and supplies to European battlefields, to crush Prussian Militaryism. Hog Island shipyard is now 95 per cent completed.

Just one year ago fifteen surveyors and fifteen brush cutters arrived on Hog Island. It was the scouting party of the vast army of 30,000 that are now working, building ships. When the thirty members of the advance guard arrived there was but two buildings on the Island, one was an old weather-beaten ferry-house and the other a small squatter's cabin. Today there are 250 buildings on the Island.

At the present time 15,900 persons are employed on ship construction, 800 in the Training School and the balance are working throughout the plant. The trains, trolleys and boats transport 25,200 workers each way daily and the workers are brought from Philadelphia to Hog Island within thirty-five minutes. One year ago it was almost impossible for a motor truck to reach the Island on account of the roads; in fact, there was no form of transportation whatsoever.

It is no wonder that visitors to the greatest shipbuilding plant are amazed when the following facts are presented to them. In Hog Island there are:

15 large restaurants, serving 11,750 meals per day.

1,800,000 gallons of water used daily.

78 miles of railroad tracks completed—3½ miles yet to be laid.

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Storm Sash Hardware

THE Architect whose care and foresight in building a house results in continuous money savings for the house owner *after* its completion, will have many kind words said of his work. STANLEY Storm Sash Hardware *effectively prevents cold drafts getting in and saves coal.* Coal not only is expensive but it's hard to get at any price.

It's up to you to do your share in helping the country conserve fuel and you will find that **STANLEY** Storm Sash Hardware, admirably designed, convenient to use, strong, durable and attractive in appearance, is an important item which should be among your specifications.

Full information as to sizes, styles, etc., is given in our catalog on Garage Hardware. We shall be very glad to send it on request.

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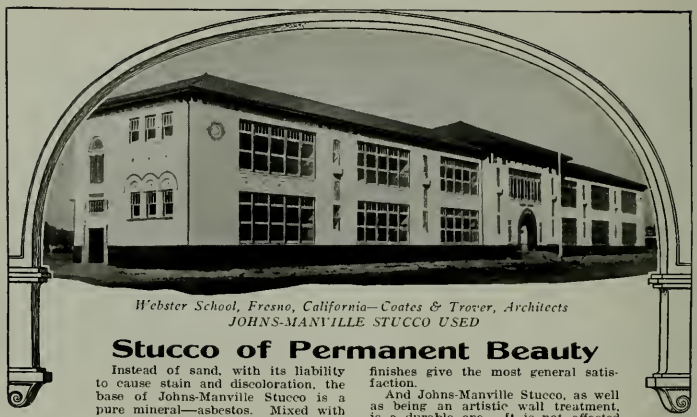
Manufacturers of Wrought Bronze and Wrought Steel Hinges and Butts of all kinds, including Stanley Ball Bearing Butts. Also, Pulls, Brackets, Chest Handles, Peerless Storo Sash Hangers and Fasteners, Screeo Window and Blind Trimmings, Furniture Hardware, Twinrold Box Strapping and Cold Rolled Strip Steel.

Stanley Garage Hardware is adaptable for factory and mill doors.



Webster School, Fresno, California—Coates & Trover, Architects
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Instead of sand, with its liability to cause stain and discoloration, the base of Johns-Manville Stucco is a pure mineral—asbestos. Mixed with Portland cement, it produces an artistic outer wall coating which retains its attractive appearance against extremes of weather.

Many desirable finishes or textures are possible with Johns-Manville Stucco—from a flat finish to a very rough cast. Stipple and rough cast finishes give the most general satisfaction.

And Johns-Manville Stucco, as well as being an artistic wall treatment, is a durable one. It is not affected by water or sudden changes of temperature, and the fibrous nature of the asbestos binder reduces cracking and flaking to a minimum. It is fire-resistant, and also insulates against heat and cold. Its ease of application, too—since it comes ready mixed—makes it economical.

JOHNS-MANVILLE SERVICE COVERS THE CONTINENT

H. W. JOHNS-MANVILLE CO.
of California
Second and Howard Streets, San Francisco
Los Angeles Sacramento San Diego Stockton

Johns-Manville Asbestos Stucco

116,450 feet of water pipe laid.
41 ships under course of construction.
2 ships launched.
18 miles of roads constructed.
127,000 piles driven. Would reach from Philadelphia to Chicago.
90,000 feet of compressed air pipe in use.
72,500 feet of ditches dug for drainage.
71,350 feet of sewerage pipe laid.
16,300 feet of fuel oil pipe laid.
30,000 feet of earth dredged from river daily.

This would cover Hog Island to a depth of three feet.

4,643,000 cubic feet dredged up to September 20th.
4,500,000 rivets driven since February.
53,000 tons of steel placed on shipways.

Hog Island was constructed in what was said to be the coldest winter in the history of Philadelphia. With the mercury a greater part of the time below the zero mark and the ground frozen to a depth of forty-two inches, the workmen toiled and it is to them that Hog Island has risen as a monument to their efforts, suffering and patriotism.—Hog Island News.

Many Californians in This Regiment

With their regimental song, "Onward Christian Soldiers," the Thirteenth Regiment of United States Marines has arrived in France.

In connection with its departure, the number "13" played an important part. The regiment left the overseas depot at Quantico, Va., on Friday, September 13th, with many of the men using the number as a lucky omen. Numbers of them shook hands with each other thirteen times, said goodbye to comrades thirteen times and sang thirteen songs on their departure. One marine made an effort to take along thirteen black cats, but was unable to carry out his ambition.

The Thirteenth Regiment is rated as one of the crack units of the Marine Corps. A record of efficiency was attained by it in marksmanship shortly before leaving Quantico.

California is well represented in the Thirteenth Regiment, almost one-half of them took their initial training at Mare Island, California.

San Francisco Bankers Interested in New Steel Plant

The shortage of scrap and pig iron in the northwest has accentuated the desirability of having the means in the section of supplying these necessities. The proposal of Mr. B. L. Thane and associates to erect a $25,000,000 steel and pig iron plant on Puget Sound comes at a time when its need is most apparent. Mr. Thane, who is handling the engineering features of this proposed industry, is head of the Alaska-Gastineau Mining Company at Juneau and has associated with him in the steel project Mr. William H. Crocker of the Crocker National Bank, San Francisco; Mr. Herbert Fleischacker, president of the Anglo-London and Paris bank of San Francisco, Mr. S. F. B. Morse, capitalist of San Francisco, and some of the strongest financial units of the east. Two years have been spent in making investigations of conditions on the Pacific coast and the possibility of utilizing raw materials for the manufacture of steel and pig iron. These have been located and found to be abundant for the purpose. Control of these resources has been secured and the interests back of the enterprise are convinced that steel and pig iron can be produced as cheaply on the Pacific coast as anywhere in the United States. Mr. Thane, after four months spent in the east in behalf of this industry, has returned to Seattle to continue work on the project. He states that erection of the plant is assured and that progress to that end has been as rapid as could be expected in view of present unsettled conditions.

Concrete Shipbuilding

The Concrete Craft Corporation has been incorporated with offices at 408 Leary building, Seattle. G. E. Kastengren is president of the concern. The purpose of the company is to build fishing boats and small craft generally and after the war, pleasure craft. The plant will be located at Salmon Bay. The company has offered its services to the government for war construction work. The boats will be built after patents of Mr. Kastengren consisting of permanent molds for concrete craft and he also has a patent on a longitudinal truss which will be placed in the ship, constituting the backbone of the vessel and lightening it as well.

500 Houses for Oakland

The government Housing Bureau has issued a blanket permit permitting the city of Oakland to build 500 homes without individual sanction. The houses are needed to relieve congestion.

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AS a waterproofing — its element resisting qualities are truly wonderful. It prevents disintegration caused by water seeping into the walls and from the heat of the sun's rays.

As a beautifier — the large variety of tints will satisfy the most fastidious color taste.

Write for Booklet No. 44 which illustrates a few of the Bay State Brick and Cement Coating uses, and if you specify the tint you desire we will gladly send you a sample.

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"Builded Better Than She Knew"

By Morris M. Rathbun in the Road Maker

WHEN California in 1913 began the construction of its present state highway system, which trunk-lines the state from north to south, the taxpayers little dreamed that they were engaging in a preparedness measure destined to rank high from a military standpoint in 1918.

Announcement that the last two gaps, totaling 21 miles, will be completed this fall has brought a general realization that California builded better than she knew in spending two bond issues aggregating $33,000,000. The state now may pride itself on having a military highway of the first class along its coast for nearly a thousand miles —an improved roadway that will permit of most rapid mobilization of troops, munitions and supplies, one of the most essential conditions in modern warfare.

The original bond issue for $15,000,000 and general plan in 1913 were to have a State highway from San Francisco to San Diego completed in time for the opening of the two great world expositions held in these cities during 1915. A military necessity was remote from the minds of the enthusiastic State builders who voted overwhelmingly for the bonds. They had in mind that thousands of visitors would come to the expositions in automobiles and that some provision should be made for them to tour between the exposition cities on a good road. The automobile parties came as expected, and have been coming each year in increasing numbers; but it was not until this fall that California could proudly announce that its big job is finished after five years and that there is a complete revel for the motorist and a real Roman military highway for Uncle Sam if he finds need for it.

There is a touch of sentiment in the coast route of the newly completed State highway, as it follows the trail blazed by the padres more than a century ago in establishing a chain of missions from the Mexican line on the south almost to the Oregon line on the north. The old trail was known as El Camino Real, or King's Highway, the territory then being a Spanish possession. It recently has been marked with mission bells its entire length, with sign-posts directing travelers to the twenty-odd missions stationed about thirty miles apart extending from San Diego, through Los Angeles, Santa Barbara, to north of San Francisco.

Curiously enough, the original highway was half general utility and half military, as it was the only lane of transportation for soldiers and civilians alike. Last year, something more than a hundred years after the first soldiers of the King of Spain—sent to seize the territory—had mounted guard in front of the quaint missions, the modernized highway was pressed into use by soldiers mobilized for the defense of Liberty and not seeking territorial conquest.

The development of the war has brought out that an important part of coast defense is the ability to mobilize heavily armed forces at given points in the shortest possible time. This is exactly what the beautiful new scenic highway will provide along the west coast.

The various forts, bases, naval stations, batteries and camps facing the Pacific are brought within the easiest possible highway travel of each other.

Huge army trucks can make their maximum speed every inch of their journey, if need be, while cavalry, artillery and infantry have the same opportunity. One of the favorite feats of enthusiastic automobile dealers in calling attention to their respective cars is to make the trip between Los Angeles and San Francisco in less time than the railway trains.

Because of the heavy travel and the thickly settled interior valleys, the State highway between Los Angeles and San Francisco—a distance of approximately 500 miles—is over two routes. One clings to the coast while the other curves to the inland. Thus should either the north or the south end of the State require the presence of large troop bodies, there would be two main arteries available. The inland road taps one of the richest soil products sections in the world, and the coast route bisects the miles of California bean fields which produce 51 per cent of the crop of the United States.

Old Wines

STORE THEM AWAY FOR THE FUTURE
THEY IMPROVE WITH AGE.

Golberg, Bowen & Co.

WINE MERCHANTS 242 SUTTER STREET

Facts from the Field—
The Interior of These Santa Fe Shops Is Painted With
PABCOAT—The Stone Veneer
After the SANTA FE Railroad Company's shops at San Bernardino were destroyed by fire over a year ago, one of the most important considerations in planning the new building was to make it as nearly fire-proof as possible.
The Company had for some time carefully tested and extensively used PABCOAT at various points on the system, and, therefore, fully appreciated its fire retarding as well as its preservative qualities. It was only natural, then, that the specifications provided that the interior of the new shops be painted with PABCOAT.
PABCOAT will adhere to brick, concrete, iron, or wood and forms a veritable stone veneer or coating that will not crack, blister or peel. It may be applied by brush or by an air-spray machine. The latter method—the modern way—assures the work being done in a fraction of the time—at a fraction of the cost.
Let us show you how PABCOAT will reduce your fire risk.
THE PARAFFINE COMPANIES, INC.
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Via the coast route, artillery and other forces could be mobilized at a given point before any invading forces could effect a landing.

Already these State highways have done their bit in a military way after having won acclaim from farmers, ranchers, trucking outfits, stages and autoists. The tens of thousands of men who have been stationed at Camp Kearny, 100 miles south of Los Angeles, have been fed and outfitted for nearly a year with supplies transported over the State highway, and the same may be said of the camps in the north.

Full possibilities of the trunk lines have not yet been tested, but it is a safe assumption that should a military contingency arise in California, not only military commanders but the citizens in general would have occasion to bless the day the first ground was broken for the nearly completed system of almost 2000 miles.

A New Book on "Concrete Stone Manufacture"

In 1915 Mr. Harvey Whipple, managing editor of Concrete, Detroit, Mich., published a valuable treatise on "Concrete Stone Manufacture." At that time it was the first and only volume that had appeared on the subject and was read with eagerness by those who wished to inform themselves upon a subject that was destined to become a factor in the building industrial world.

Since 1915 this author has gathered much new data, made possible from practical experience and the development of the industry. The book, therefore, has just been completely revised and considerably enlarged and the new edition is just being put on the market.

The new volume covers more than 300 pages, with nearly 200 illustrations, and supplies as near a complete education on this kind of work as one can possibly get from a book. It includes chapters on the selection and combination of materials; the layout and equipment of plants; moulding and curing; surface treatment; shop records and cost keeping, and closes with some very pertinent suggestions on business methods and plans for selling the product.

The author has set out with a determination to give real value to his readers and has succeeded remarkably well. The book is bound in blue cloth and sells at only $1.50.

Cranetilt Traps for Vinegar and Pickle Works

Crane Company (Oakland branch) has recently installed in the plant of the Pacific Coast Vinegar & Pickle Works at Hayward, two No. 107 (three-inch) direct return Cranetilt traps, which will take care of the condensation from thirty-one copper kettles used for cooking tomato paste.

Condensation from the kettles is carried in from a common 6-inch return line to a receiver 36 inches in diameter by 5 feet 6 inches long and from this point the pressure forces the condensation to a header leading to the direct return traps whence it is discharged into three Parker boilers of 200 horse power capacity each, and one Badenhousen boiler of 300 horse power capacity. These traps are vented into a feed water heater in the boiler room. They discharge against a boiler pressure of 150 pounds, and discharge their capacity in thirty-two seconds.

Condensation is being returned to the boilers under a temperature ranging from 330 degrees to 360 degrees, according to the number of kettles in operation. The vent from these traps has caused a raise in the make-up feed water temperature from 160 degrees to 208 degrees, making a saving in this particular feature of 5 per cent in fuel.

Before these traps were installed, it was impossible to operate more than fifteen kettles at one time; now the entire 31 kettles may be operated and still have excess boiler power. Since the traps were installed quite a change in the boiling of tomato pulp has been noticed, the boiling taking place more rapidly.

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In Defiance to the Kaiser

OPEN AIR MEETING OF ARMCO EMPLOYEES PLEDGING TO STAY ON THE JOB UNTIL THE WAR IS WON

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Automatic Drainage Gates for Mosquito Abatement Work

EXTENSIVE drainage work is being carried on in various parts of California for the purpose of mosquito control, a number of districts having been organized under the Mosquito Abatement District Act of 1915. The reduction in the number of malaria cases reported to the State Board of Health from such districts as Oroville and Los Molinos in

Calco Automatic Drainage Gate

the great Sacramento Valley, and in the neighborhood of Bakersfield and other places in the San Joaquin Valley, as well as in Marin and San Mateo counties along the coast, indicate a very tangible gain in the prevention and eradication of this serious communicable disease.

Malaria is communicated from infected persons to the healthful by the sting of the anopheles mosquito—yes, "the female of the species is more deadly than the male," and carries the deadly germs of the plague of the lowlands as she buzzes busily from bedside to bedside. This disease-laden lady likes to lay her eggs on the lazy surface of languorous water courses or the grass edged banks of pools and lakes. Mosquito abatement lies in the economical drainage of such areas of stagnant water, the stimulation of sluggish streams, and in other measures where these are not feasible.

Mosquito control engineering has been developed so that it is known desirable results can be accomplished mainly in four ways:

1. By draining or filling small ponds or pools.

2. By reshaping small water courses so as to secure rapid flow in a narrower channel.

3. By clearing stream banks.

4. By oiling the water surfaces at regular intervals during the mosquito season, or for about six months.

Automatic drainage gates fitted to suitable lengths of corrugated iron pipe have been used extensively in the drainage work carried on for the purpose of mosquito control. Such gates have proved an economical and most efficient means of ridding large areas of land, lying between low and high water levels of the sea or such bodies of water as San Francisco bay, Suisun bay, etc., of the drainage water. Similar use in draining agricultural lands, protected by levee systems in the two great interior valleys of California, and in facilitating the drainage of low sections of irrigated districts throughout the state, has been made of these Calco automatic drainage

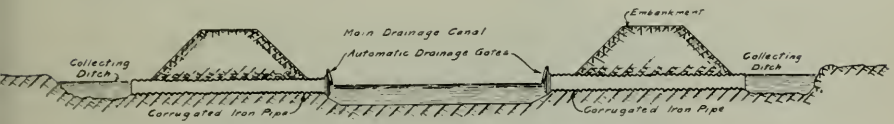


DIAGRAM SHOWING OPERATION OF DRAINAGE GATE

gates, which device was perfected by the California Corrugated Culvert Company of West Berkeley, California.

Such areas of flooded or tidal lands are kept free of stagnant water by carefully planning a series of collecting ditches, by which the drainage water can flow to reach the main channel. These ditches empty into a sump on the inside of the dyke, levee or canal bank, through which a length of "Armco" iron corrugated pipe extends into the main discharge channel or canal.

At the outlet end of the pipe a Calco automatic drainage gate is fitted. Its sensitively balanced shutter automatically opens when a difference of head of water

pressure of only a few hundredths of an inch occurs between the flow of the discharge canal, and the drainage ditches on the inside of the bank, permitting the passage of the drainage water collecting in the sump.

With the rise of the tide on the exterior side of the dyke or levee, or an increase in the head of water in the irrigation canal, the automatic gate, responsive to the exterior pressure, promptly closes. Because of the carefully machined and ground surfaces of the gate and seat, a perfect fit is secured, resulting in a water-tight construction which prevents the passage of water to "back up" on the drained land.

The automatic feature of this action permits of the minimum of attention being given the system. In fact, users throughout the state declare they forget all about them, once the gates are installed. The cast iron construction, attached to the rust-resisting "Armco" iron corrugated pipe assures lasting service, and this same construction makes installation costs far below that of either wooden or concrete gates and drains.

AUTOMATIC DRAINAGE GATE, CLOSED

AUTOMATIC DRAINAGE GATE, OPEN

G. E. Witt Co., Inc., Wins Suit Against Barley & Reichel for Patent Infringement

AN important decision of interest to users of oil-burning equipment has recently been handed down by the Southern Division of the United States District Court for the Northern District of California, Second Division, Hon. Frank H. Rudkin, Presiding Judge. In the case of G. E. Witt Co., Inc., well known San Francisco engineers, against Harry Barley and Curt R. Reichel for alleged patent infringement of an improved liquid fuel governor, the court has found for the complainant and the defendants have been ordered to reimburse the Witt Company for any and all damages suffered and it is further ordered by the court that the defendants be restrained from manufacturing or selling the fuel governor, which is fully protected by U. S. letters Patent No. 986791, dated March 14, 1911.

The G. E. Witt Co., Inc., is one of the pioneer firms of San Francisco dealing exclusively in oil-burning equipment, and the decision in its favor will be received by the trade with approval.

Following are the principal paragraphs of the court's decision:

INTERLOCUTORY DECREE

This cause having heretofore come on regularly to be heard upon the pleadings and proofs documentary and oral, taken and submitted in the case and being of record herein, the complainant being represented by N. A. Acker, Esq., and the defendants by Carlos P. Griffin, Esq., and the cause having been duly argued and submitted to the Court for its consideration and decision, and the Court being fully advised in the premises, it is Ordered, Adjudged and Decreed as follows:—

That at all times mentioned in the Bill of Complaint herein, the defendants, Harry Barley and Curt R. Reichel were co-partners doing business under the firm name and style of Barley & Reichel, having a regular and an established place of business in the city and county of San Francisco, and in said State of California; that the letters patent sued on herein, towit, United States Letters Patent No. 986791, dated March 14, 1911, for an improved Liquid-Fuel Governor, and each and all the claims thereof are good and valid in law; that George E. Witt, of the City and County of San Francisco, State of California, was the original, sole and first inventor of the inventions described and claimed in the said Letters Patent No. 986791; that the said George E. Witt on the 22d day of December, 1918, by an assignment in writing duly executed and recorded in the United States Patent Office assigned and transferred the said letters patent, together with all claims and demands, both in law and equity for damages and profits for the past infringement thereof, unto the complainant herein, and that ever since the said 22d day of December, 1915, complainant herein has been and still is the owner and holder of the said letters patent and of said claims, demands and causes of action for the past infringement thereof.

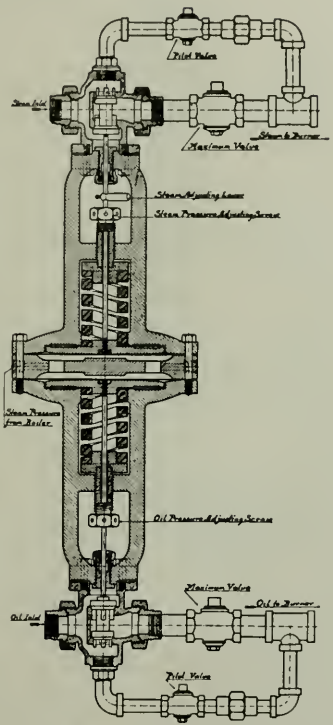
That upon each and every one of the devices manufactured, used and sold by the complainant or its assignor, made in accordance with the said letters patent in suit herein and the invention covered thereby and set forth in the claims thereof, the word, "Patented," together with the said date and number of said letters patent, has been marked and stamped, thereby notifying the public of the same.

That since the issuance of said letters patent in suit herein, and both prior and subsequent to the commencement of this suit and within the Northern District of California, and elsewhere, the defendants herein and each of them, without the license or consent of the complainant herein, or complainant's assignor, the defendants upon each and all of the claims of the said letters patent No. 986791, by making and selling, and offering for sale and inducing others to use the inventions claimed and patented in and by each and all of the claims of the said letters patent in suit herein.

That each and all of the allegations in the said Bill of Complaint herein are true.

And it is further ordered, adjudged and decreed, that the complainant recover from the said defendants the damages which the said complainant has suffered, together with the gains, profits and advantages which the said defendants and each of them has or have realized from and by reason of the infringement of the letters patent aforesaid.

And it is further ordered, adjudged and decreed that the defendants herein and each of them, their agents, servants, employees, and attorney be and they are each hereby enjoined and restrained from the further commission of each and all of the acts of infringement hereinbefore enumerated, by either



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making, selling, using, advertising for sale, keeping on hand for sale, having manufactured, installing or having installed, or in any manner dealing directly or indirectly in the infringing articles or merchandise covered by the invention of the said letters patent in suit and embraced and contained in the claims thereof. * * *

Our Shipbuilding Progress Up to September 1st

MORE than three million tons of shipping have been built in United States shipyards as a part of our answer to Germany's plan to wipe out all of the merchant marine of her enemies, according to the report of the Emergency Fleet Corporation for business up to the end of August.

On the first of August there were 171 shipyards at work, of which 76 were steel, 85 wood, 2 composite and 7 concrete.

In addition to the 557 vessels of 3,028,289 tons built for the order of the Emergency Fleet Corporation or requisitioned by the corporation while building for other owners, 402 steamships aggregating 2,790,792 tons had been commandeered from foreign or domestic owners. Thus a total of 5,819,081 tons is now afloat under the control of the shipping board.

The fleet corporation programme as now outlined calls for a merchant marine of 2,651 ships, of a total deadweight tonnage of 16,003,504. There remains to be built, exclusive of what has been launched in September, 10,184,423 tons. The fleet corporation also is building a "mosquito fleet" of tugs, lighters and barges totaling fifty thousand tons.

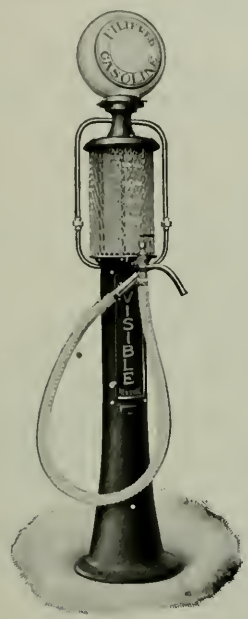
Of the hundreds of millions of dollars which this merchant fleet will cost the United States, more than $10,500,000 is spent weekly in wages to shipbuilders and a good share of the Fourth Liberty Loan will go to the Emergency Fleet Corporation to meet current costs of material and labor.

The most recent shipbuilding statistics as given out by the fleet corporation, are as follows:

Date.	No. of Wood Ships.	D.W.T.	No. of Comp. Ships.	D.W.T.
Aug. '18	137	488,100	9	34,000
Aug. '18	33	111,350	4	14,500
Totals	170	599,450	13	48,500

Date.	No. of Contr. Ships Steel.	D.W.T.	No. of Reqt. Shp. Steel.	D.W.T.
Aug. '18	82	531,900	248	1,572,258
Aug. '18	30	183,450	14	92,730
Totals	112	715,350	262	1,664,988

Total number ships up to Aug 1	476
Total D. W. T. up to Aug. 1	2,626,259
Total number ships during August	81
Total D. W. T. during August	402,030
Total number ships August 31	557
Total D. W. T. August 31	3,028,289



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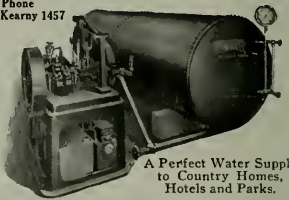

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The original Austin switches have been in operation now on various work throughout the state for a number of years, with the result that they have saved several thousand dollars to owners in the protection afforded their motors under the most trying conditions, in addition to the saving on fuse bills, which has been entirely eliminated.

To sum the matter up briefly, the manufacturers want you to remember that—

"Wemco" Protective switches are equipped with overload and low voltage release; operate in oil and do not depend upon fuses.

"Wemco" switches are equipped with circuit breaker, which may be locked at its rated amperage. Your motor protection is absolute, as this switch takes care of single phasing, overload or low voltage.

"Wemco" switches are not an experiment, for, as before stated, they have been in operation for a number of years in some of the largest industrial corporations on the Pacific Coast.

"Wemco" switches pass all requirements of and are approved by the Industrial Accident Commission of California. It is generally conceded by electrical engineers that a fuse at its best is uncertain; likely to blow either below or above its rating; thereby necessitating extra expense by the repurchase of other fuses or burning up your motor.

Also the possibility arises of improper fusing due to carelessness or ignorance on the part of employees; this will also cause your motor to burn out.

"Wemco" switches are set at the proper amperage, and if change is desired the service of a competent electrician is advisable. Their action is positive and therefore fool proof, without trigger attachments or other finicky arrangements to get out of adjustment.

Particular attention has also been paid to the mechanical design and construction and in the selection of material that would be best suited for the work, so that with ordinary care they will be serviceable for many years. They are quite compact and neat in appearance.

"And in conclusion," say the manufacturers, "when you require a protective switch on your motor specify 'Wemco' and do not be satisfied with a substitute which can not give you the results in protection which you are entitled to and which you owe yourself as a good sound business investment."

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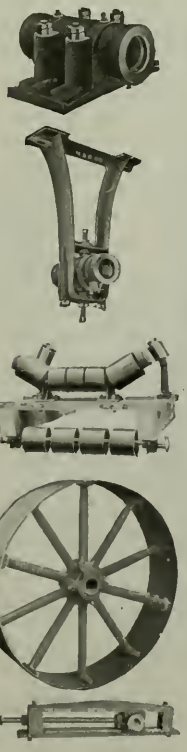

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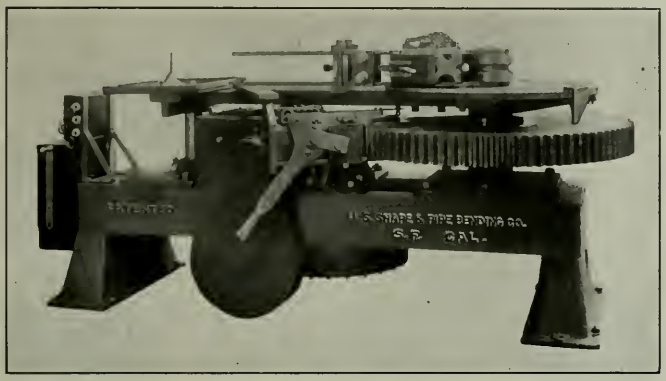

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Fuller & Goepp, 34 Davis St., San Francisco.

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Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
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Fick Bros., 475 Haight St., San Francisco.

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Wm. F. Wilson Co., 328 Mason St., San Francisco.

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Wm. F. Wilson Co., 328 Mason St., San Francisco.

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Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
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United Materials Co., Crossley Bldg., San Francisco.

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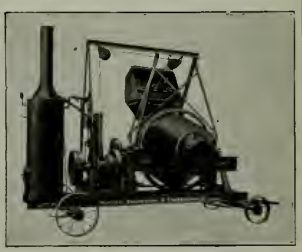

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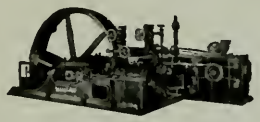

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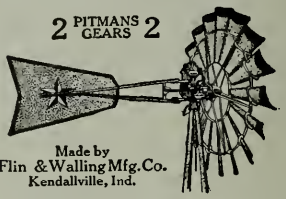

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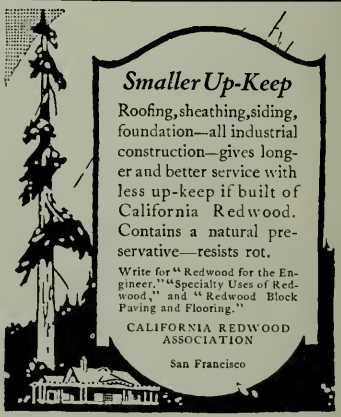

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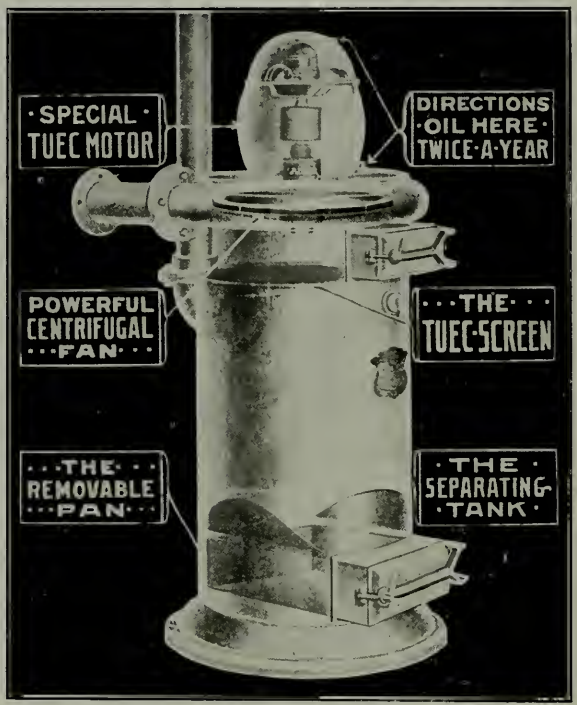

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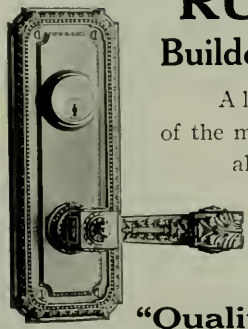

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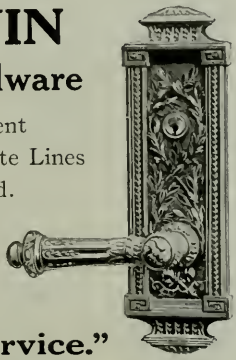

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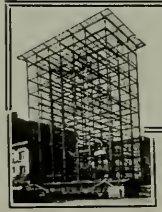

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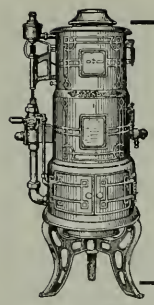

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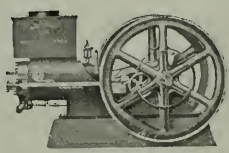

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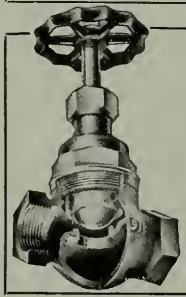

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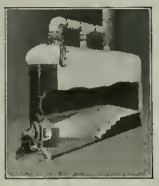

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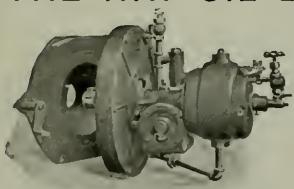

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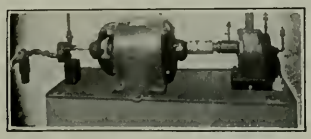

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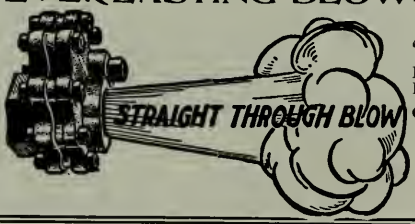

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The Architect and Engineer

Volume LV. OF CALIFORNIA Number 2.

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ARCHITECTS, STRUCTURAL ENGINEERS, CONTRACTORS AND THE ALLIED TRADES OF THE PACIFIC COAST

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JULIA MORGAN, ARCHITECT

THE
ARCHITECT
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OF CALIFORNIA

NOVEMBER, 1918 Vol. LV. No. 2.

Some Examples of The Work of Julia Morgan

By WALTER T. STEILBERG

A COLLECTION of an architect's own sketches is certainly the most charming form in which to illustrate his work. But while such a monograph may show his fertility of imagination, powers in large composition, and graphic facility, most of the profession are agreed that working drawings and photographs of executed work illustrates with greater fairness those other necessary qualities which often distinguish the architect from the architectural designer; the capacity to interpret clients' real needs and to secure their cooperation; skill in the handling of detail and in the use of building materials; and that mastery of practical knowledge which enables an architect to keep in the general vicinity of a prescribed cost, and which alone commands the respect of the builders and craftsmen who are his real instruments of expression.

The gathering of a representative collection of photographs of an architect's work may be a pleasure, but it is always a task. One must trust largely to luck to get good lighting. The optical limitations of the camera render it impossible to photograph without distortion buildings which are much above the level of the eye on any but interiors of considerable size. Many a well designed room is spoiled by poor furnishings. Many a fine exterior is ruined by scrubby or over luxuriant planting. In this instance further allowance must be made for the fact that nearly all of the following pictures were taken by the author, an amateur in photography, with a very small camera. While the examples here shown are representative of Miss Morgan's work, for the reasons stated above, many buildings of equal quality could not be illustrated.

Educational Buildings

MILLS COLLEGE—a college for women, finely located among the Oakland foothills. The Campanile, Library, Gymnasium, and Social Hall, now completed, were planned as the beginning of a large college group. The Gymnasium and Social Hall are planned to be connected by pergolas enclosing a swimming pool or garden court. The Library interior, with its high central "nave" and study-alcoves on either side, was designed with the intention of combining with a sense of spaciousness an atmosphere of study and seclusion; a quality often sacrificed in modern libraries for the sake of grandeur.

Miss Ransom and Miss Bridges' School.

A preparatory school for girls. The main building provides accommodations for a number of boarding students as well as class rooms, teachers' rooms, and offices, library and common room. The open-air gymnasium built among the trees on the steep side of a cañon is unique among buildings of its kind and in use has proven highly satisfactory.

The Methodist Chinese Mission.

A mission school for girls in the heart of San Francisco's Chinatown. Class rooms and housing accommodations are provided. Chinese motifs were used in the cornice, the polychrome terra-cotta frieze and entrance vault, and in the iron railings and lanterns, but with the idea of giving the building a Chinese flavor rather than to make it strictly oriental in character.

The Marysville School.

A public grammar school, designed for hot weather conditions. Each room having eight awning-type windows on one side, transom and doors opening onto a gallery on the opposite side, can readily be converted into an open-air class room. The open gallery has proven valuable for drills and games as well as outdoor study.

Primary Group of the Lakeview School, Oakland.

The condition that this school had to be built on the instalment plan (the appropriations extending over a period of several years), and its close proximity to residences on either side suggested a group of three comparatively small buildings as shown on the group plan. These were built one at a time about a year apart and finally connected by porches and play sheds. The planting is not yet done but it is hoped for in the next budget.

Miss Burke's School, San Francisco.

A day school for girls. As the lot had only one street frontage and as good lighting, sun everywhere and privacy were imperative requirements, the principal rooms were grouped around a central garden court, the corridors being kept to the "blind" sides of the building and the less important rooms placed on the street frontage and the rear court. The capitals of the columns in the court are modelled after those of the Italian Building at the Panama-Pacific Exposition, as a recall of the days which are dear to the memory of every Californian.

The Berkeley Baptist Seminary.

A post-graduate theological college. The library, the chapel, the reception rooms, offices, and class rooms are in the two lower stories of the main portion of the building, the two upper stories being occupied by students' rooms. The east and west wings flanking the garden court are entirely devoted to the housing of students, accommodations being provided for seventy-five in all. The building is to be brick with terra-cotta trim and a slate roof. It will not be erected until the close of the war.

MILLS COLLEGE
THE CAMPANILE

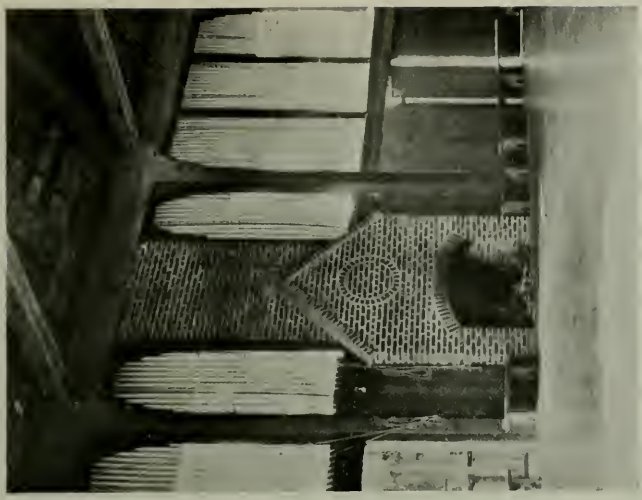
MILLS COLLEGE
THE LIBRARY

MILLS COLLEGE
THE GYMNASIUM

MILLS COLLEGE
LIBRARY INTERIOR

MISS RANSOM AND MISS BRIDGES' SCHOOL.
PIEDMONT. DETAIL OF FORECOURT

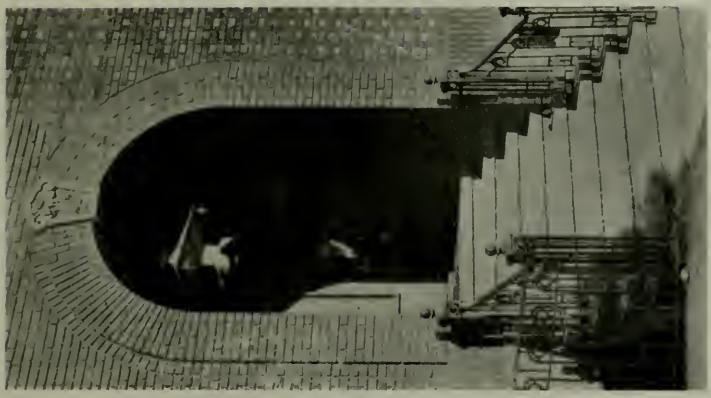
MISS RANSOM AND MISS BRIDGES' SCHOOL. DETAIL OF THE FORECOURT



MISS RANSOM AND MISS BRIDGES' SCHOOL. THE OPEN-AIR GYMNASIUM

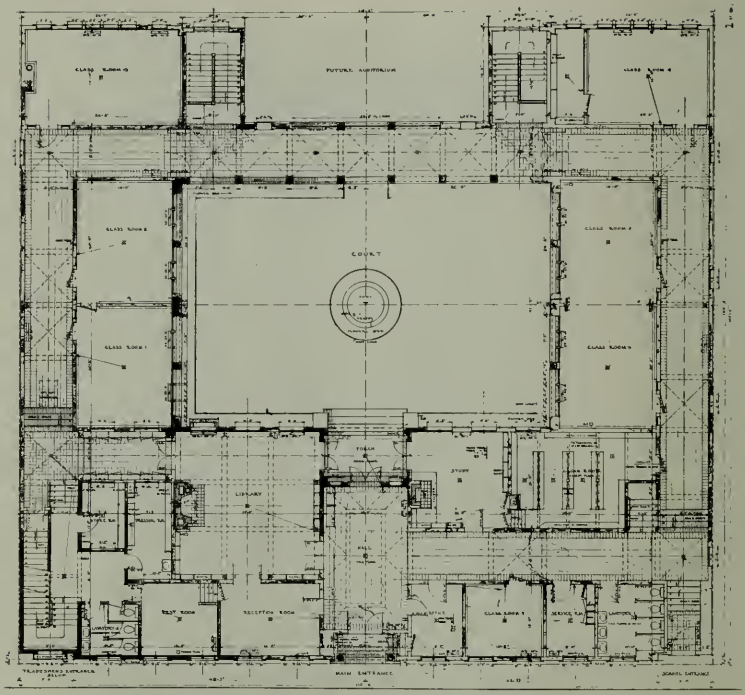
THE METHODIST CHINESE
MISSION, SAN FRANCISCO

THE METHODIST CHINESE MISSION, MAIN ENTRANCE
DETAILS OF VAULT, SOFFIT AND KEY BLOCK



PRIMARY GROUP OF THE LAKEVIEW SCHOOL, OAKLAND

MARYSVILLE SCHOOL.



MISS BURKE'S SCHOOL, SAN FRANCISCO
MAIN FLOOR PLAN

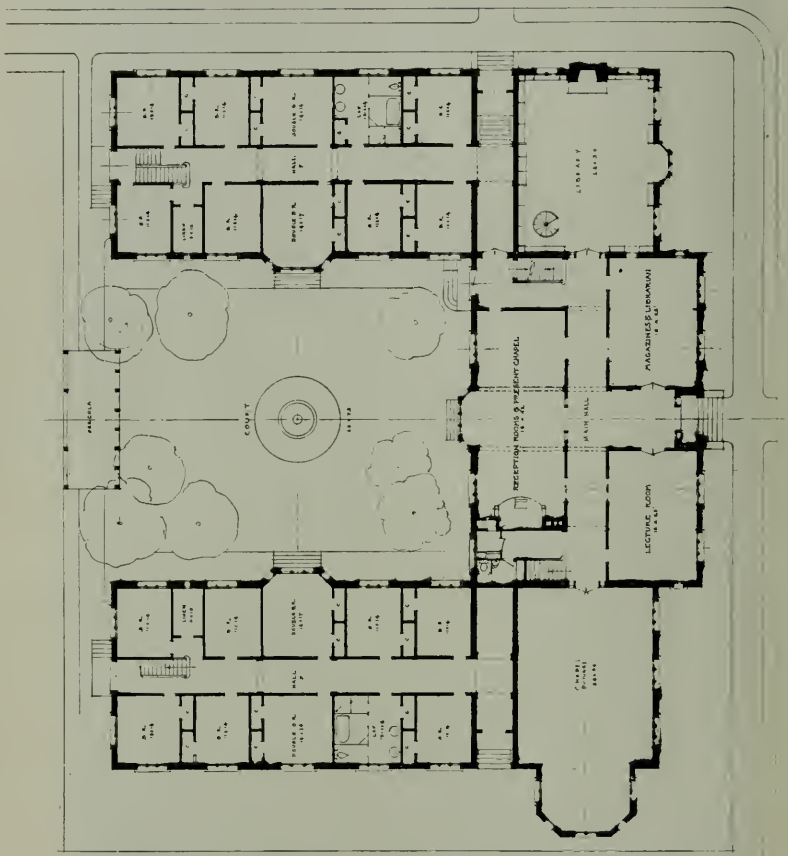
MISS BURKE'S SCHOOL.
MAIN ENTRANCE DETAIL

MISS BURKE'S SCHOOL.
STAIR HALL

MISS BURKE'S SCHOOL.
THE GARDEN COURT

MISS BURKE'S SCHOOL.
THE LIBRARY

MISS BARNARD'S SCHOOL,
BERKELEY. LIVING ROOM



THE BERKELEY BAPTIST DIVINITY SCHOOL. FIRST FLOOR PLAN

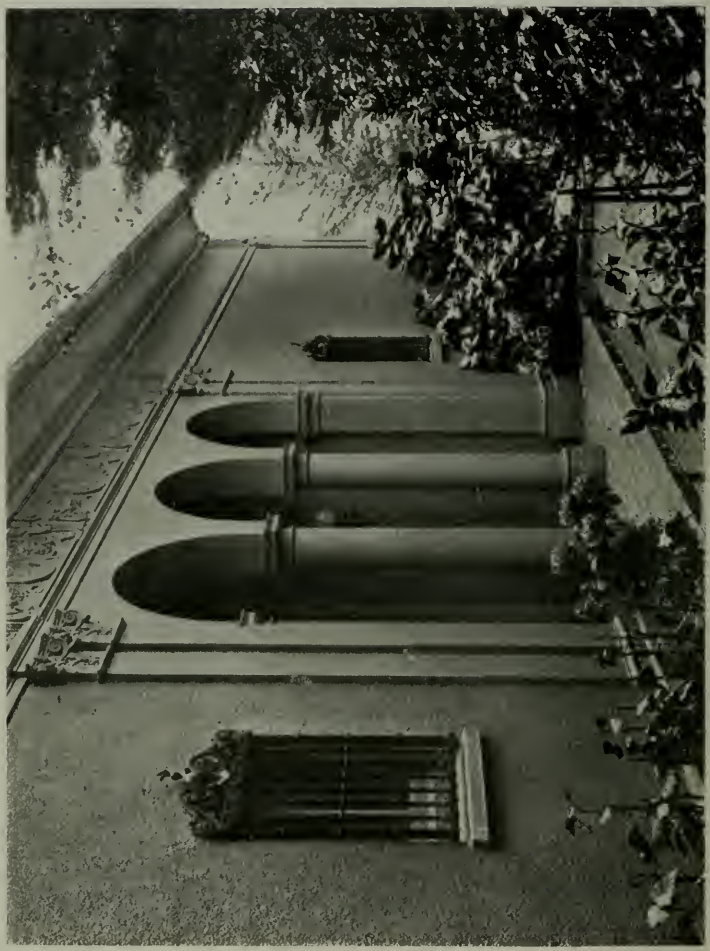
THE BERKELEY BAPTIST DIVINITY SCHOOL. ACCEPTED DESIGN

Residences

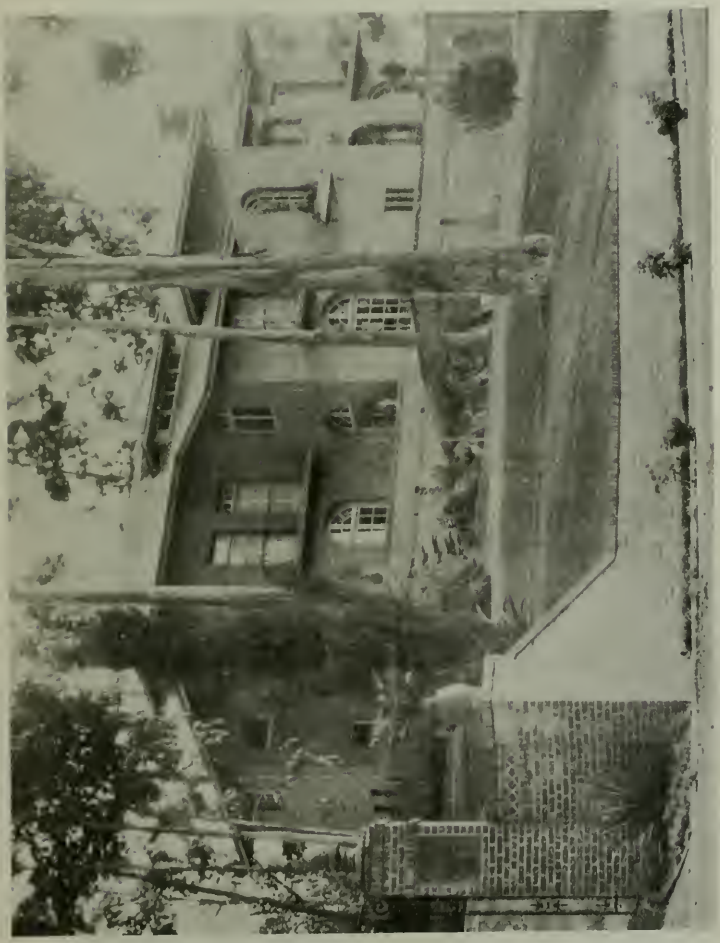
GONE are the good old days when domestic architectural design was simply a matter of crowning a hilltop with a picturesque pile that would keep out most of the rain and all of the neighbors. Of the many and varied branches of a modern architect's work, the residence problems are the most exacting; in few other types of buildings are the functions of use more insistently prescribed, and in none are the means of fulfilling these functions so thoroughly tested. To acquire a sympathetic understanding of the real needs of a family, to satisfy its complex requirements and express the best of its ideals and traditions with means which are usually all too scant, to bring the exterior into harmony with its environment—and at the same time to keep faith with one's own architectural principles is indeed a task. For all the trials of temper, ingenuity and patience, it is the personal element and the many sidedness of domestic architecture that makes it always interesting, always fresh and vital, whether the problem be a small cottage or a large estate. And there is ample evidence that it is a dangerous procedure to ignore these influences and requirements which are not purely artistic. By regarding architecture as an art like painting or sculpture, that has only to be beautiful to be great, and by designing in an arbitrary spirit, placing one's own mannerisms of expression far above the client's real needs, an architect may produce spectacular and ever charming results. But the qualities thus apparently gained often prove in the end to be superficial and ephemeral.

The following examples selected from the several hundred residences which Miss Morgan has built in the San Francisco bay region during the past twelve years, present a wide range of problems in domestic architecture in which almost the only condition in common was that the first effort was to fulfill the needs of their occupants. The clients, for the most part, were persons of culture and broad experience whose ideas and traditions deserved careful consideration, and whose personalities merited interpretation in design. There were, however, not more than a dozen instances in which abundant funds were available for the work, and the great majority of these houses were constructed on rather narrow margins of expenditure. In few cases have the grounds and setting been ample. For the above reasons, the residences here illustrated are varied in type of architectural expression and naturally do not in all cases represent the ideal of their architect, were purely artistic considerations to rule. Each one was designed from the inside out and the object was first of all to build a home.

ESTATE OF MR. GORDON BLANDING,
BELVEDERE. CASINO FOUNTAIN



ESTATE OF MR. GORDON BLANDING,
BELVEDERE. CASINO LOGGIA



RESIDENCE OF MR. CHARLES B. WELLS, ROCKRIDGE, OAKLAND

ADDITIONS TO THE HACIENDA OF MRS. PHOEBE A. HEARST, PLEASANTON

ADDITIONS TO THE HACIENDA OF MRS. PHOEBE A. HEARST, PLEASANTON

RESIDENCE OF MR. CHARLES
W. MERRILL, BERKELEY

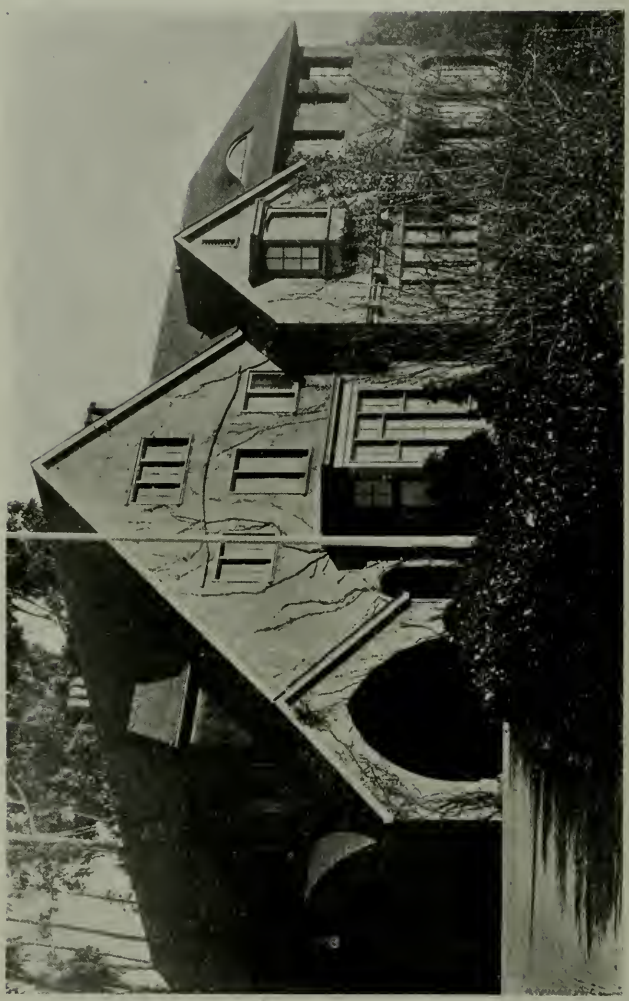
RESIDENCE OF MR. ALLEN
CHICKERING, PIEDMONT

RESIDENCE OF DR. WALLACE, BERKELEY

COTTAGE FOR MR. WILLIAM T. BEATTY, PEBBLE BEACH

RESIDENCE OF RICHARD B. AYER
ENTRANCE DETAIL. PIEDMONT

RESIDENCE OF MISS CHARLOTTE
PLAYTER. PIEDMONT



RESIDENCE OF MISS CHARLOTTE
P L A Y T E R , P I E D M O N T

RESIDENCE OF MR. RICHARD
B. AYER, PIEDMONT

RESIDENCE OF MR. GEORGE L. WALKER, ALAMEDA

RESIDENCE OF MR. JAMES L. LOMBARD, PIEDMONT
Original sketches by Young & Maentosh, Croydon, England

RESIDENCE OF MR. RICHARD
A. CLARKE, BERKELEY

COTTAGE FOR MR. CHARLES B. WELLS, ROCKRIDGE, OAKLAND

RESIDENCE OF MR. E. W. LINFORTH, BERKELEY. ENTRANCE DETAIL

RESIDENCE OF MR. CHARLES B. WELLS, ROCKRIDGE. WROUGHT IRON ENTRANCE GRILLE

RESIDENCE OF MR. ABRAHAM
ROSENBERG, SAN FRANCISCO

RESIDENCE OF MR. ABRAHAM ROSENBERG. ENTRANCE HALL

RESIDENCE OF MR. ABRAHAM
ROSENBERG, SAN FRANCISCO

RESIDENCE OF MR. DUNNING RIDEOUT, MARYSVILLE. DINING ROOM

RESIDENCE OF MR. CHARLES HEXTER,
MARYSVILLE. SUN PORCH

RESIDENCE OF MR. DIXWELL DAVENPORT, SAN FRANCISCO

RESIDENCE OF MR. DIXWELL DAVENPORT
DINING ROOM FIREPLACE

RESIDENCE OF MR. DINWELL,
DAVENPORT. LIVING ROOM

Institutional Buildings

A WOMAN'S CLUB, a hotel, a gymnasium, a school, a bath house, a restaurant, a public auditorium and several other things rolled into one, constitute a Young Women's Christian Association building. To properly unify these diverse elements in one building and at the same time to so dispose them as to permit their separate use, presents a nice planning problem. And since the object of the Association is service it is necessary to constantly exercise a strict sense of economy in design and detail in order that the building may serve as many as possible.

The Oakland Y. W. C. A. building, one of the largest in the West, has as its central motif a court suggested by Bramante's masterpiece at Santa Maria della Pace in Rome. Galleries around this court on the first, second and third stories provide the main circulation connecting the various departments of the institution while on the higher stories the court gives light to class rooms, club and bedrooms. At the third floor line the court is covered with a timbered skylight, permitting its furnishing and use as a place of gathering and centre of sociability. The building has a steel frame and masonry walls and was erected in 1914 at a cost of less than 19 cents per cubic foot.

The San Jose Y. W. C. A. building, although considerably smaller than the Oakland building, has the same complex functions. The main mass is a simple oblong rectangle with the lower swimming pool building along one side. The latter is set back from the street far enough to provide space for a small garden serving as an approach to the main entrance.

Y. W. C. A., SAN JOSE. THE GARDEN GATE

In both of these buildings the gymnasium is spanned by steel trusses built into the partitions of the stories above.

The Recreation Centers at San Diego and San Pedro serve much the same purposes as a Y. W. C. A. building. These are both frame structures and in a sense temporary, as they were built primarily to provide wholesome and properly supervised recreation for the girls engaged in war industries at these seaports.

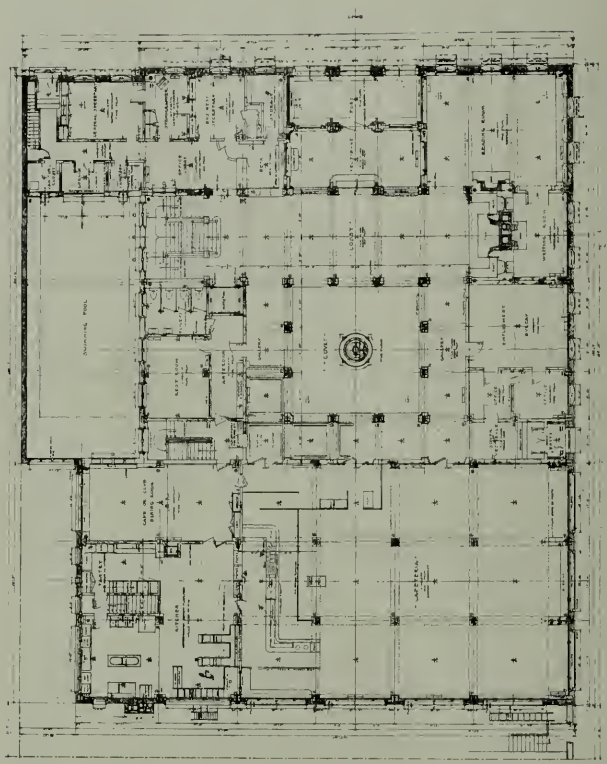
BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, SAN JOSE

BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, SAN JOSE. LOBBY

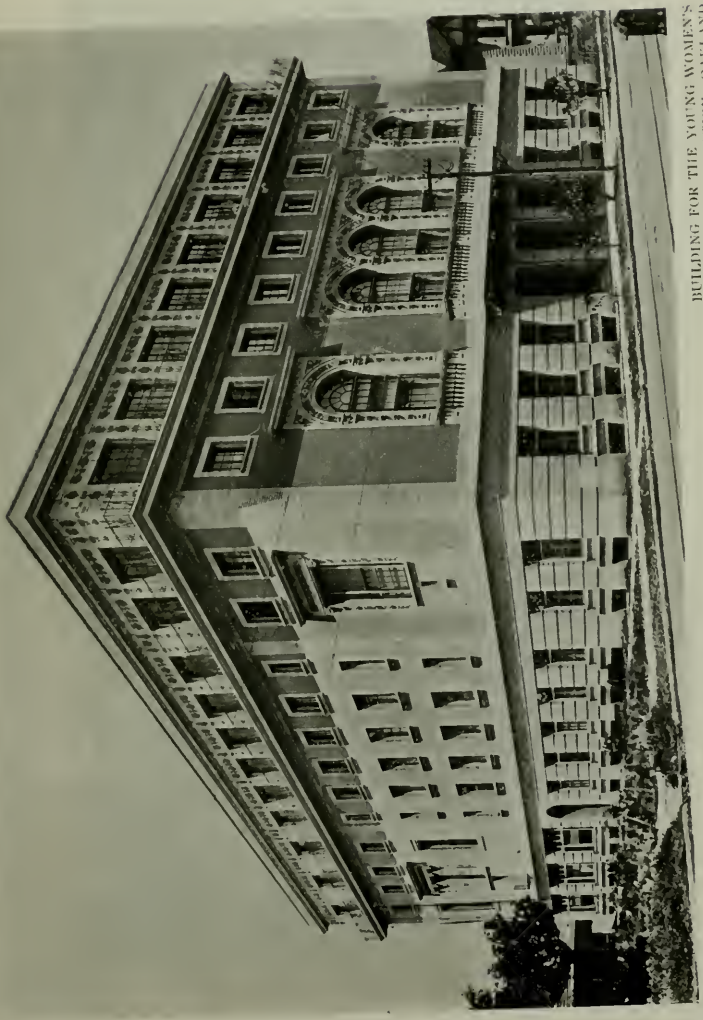
BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, SAN JOSE. THE SWIMMING POOL

BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, SAN JOSE. SOCIAL HALL

IRON GRILLE PATTERN FOR LARGE ARCHES AT N. & S. ENDS OF LOBBY IN L. A. EXAMINER BUILDING SCALE 1½"=1'-0"



BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, OAKLAND. FIRST FLOOR PLAN



BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, OAKLAND

BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, OAKLAND. THE COURT

BUILDING FOR THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION, OAKLAND. THE COURT

Hospitals

THE King's Daughters Home, Oakland, is a sanatorium for patients not usually admitted to other hospitals. Privacy is secured by placing the group back and well above the street and by enclosing a large garden court on all sides but the south. The buildings are so oriented that all patients' rooms and wards are sunny. The administrative and service elements are housed centrally on the northerly side of the group. The exterior walls are of ochre grey and warm brown brick with frieze and insets of polychrome terra-cotta.

Tubercular Sanitariums for California Counties.

Many of the counties in this State are erecting special tubercular hospital groups in locations adapted to the treatment of the malady. The example here shown illustrates a solution for a typical ward building now under construction. The wards and separation rooms are of the open-air type—the walls being almost entirely replaced by screened openings. Broad decks, which may be sheltered by awnings in very hot weather, permit the beds to be rolled out of doors and provide a lounging place for ambulant patients.

The roof boarding itself forms the ceiling of the wards which are spanned by light timber trusses and have ventilating monitors along the ridge. The spaciousness thus gained, aided by the judicious use of some fresh, bright colors in the interior painting, will, it is hoped, give an air of cheerfulness that is always appreciated by the sick.

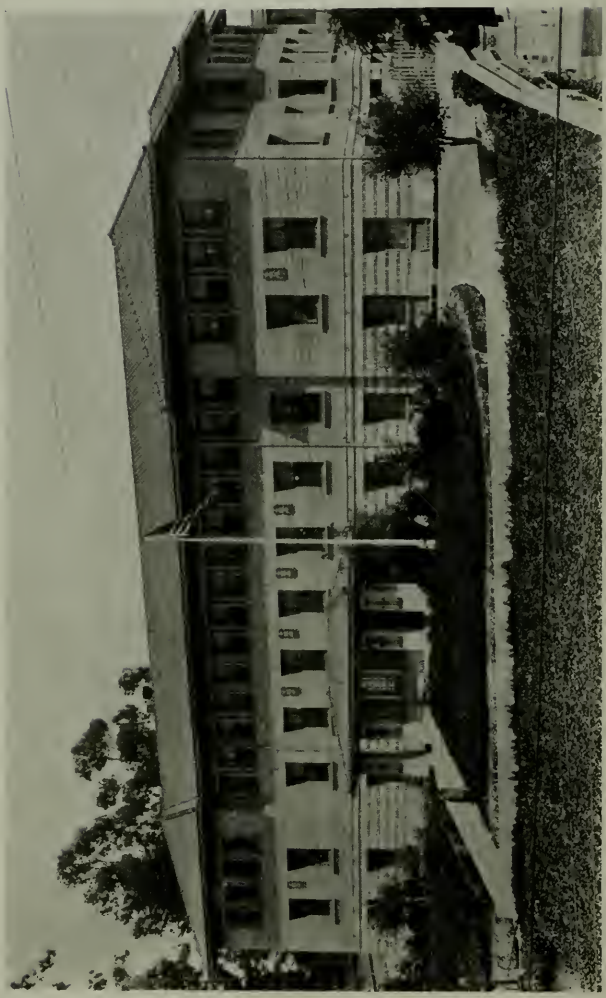
Churches

WHILE the old ideal of the monumental, permanently built church is deserving of all respect, there is also much to be said in favor of the wooden church, difficult though it is to express dignity and any great degree of religious feeling in this material. The wooden church building is more easily adapted to the changing needs of a congregation. Its cost is much less than that of the monumental type, thus releasing a large amount of money for charitable enterprises. In this unsettled country of ours, it frequently happens that a very few years after building, a church is suddenly surrounded by garages, office buildings or undertaking establishments, in which case the cheaper the structure the less the loss to the congregation which is compelled to build again in another location. All of these may seem to be sordid considerations in connection with a place of worship, but to ignore them may be to ignore an opportunity to conserve resources for service, the first purposes of the most practical of religions.

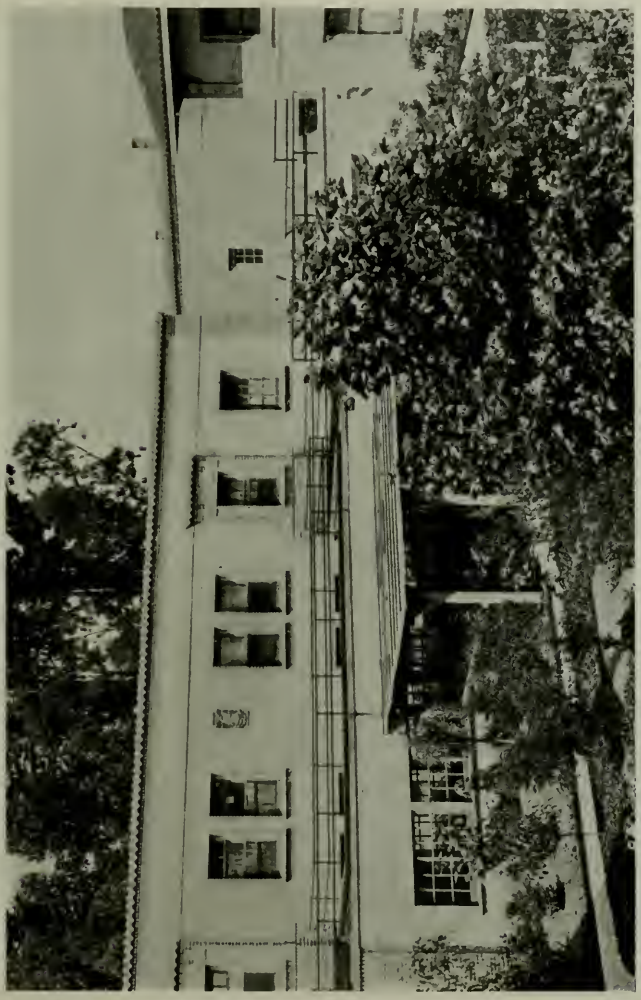
St. John's Presbyterian Church, Berkeley, was begun about ten years ago, the small Sunday School building shown at the right of the photo being first erected. As the congregation has grown, the church has grown until it is now one of the largest about San Francisco. As a safeguard against fire as well as for the decorative effects gained in the interior, the framing of all walls, as well as trusses and posts, was left open and treated as a part of the architectural design.

Trinity Church, Richmond, is still in the sketch stage and will be built probably the coming year.

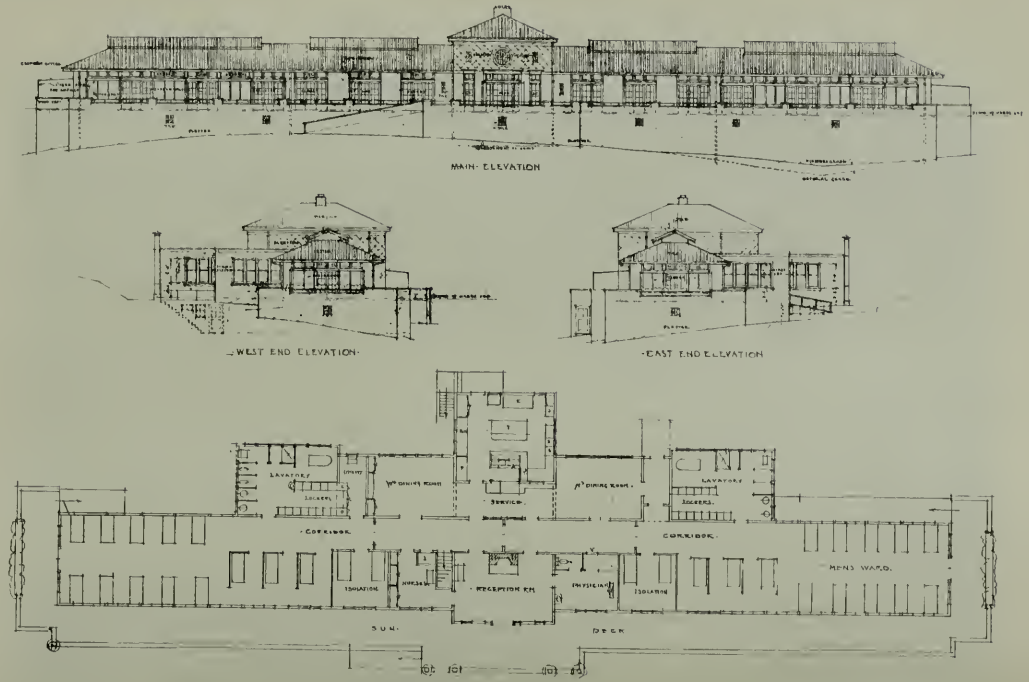
BUILDING FOR THE KING'S DAUGHTERS, OAKLAND



BUILDING FOR THE KING'S DAUGHTERS
OAKLAND. FACADE OF MAIN BUILDING



BUILDINGS FOR THE KING'S DAUGHTERS, OAKLAND
A CORNER OF THE GARDEN COURT



TUBERCULAR ISOLATION BUILDING FOR THE SANTA BARBARA COUNTY HOSPITAL

TRINITY CHURCH,
RICHMOND

ST. JOHN'S PRESBYTERIAN CHURCH, BERKELEY

ST. JOHN'S PRESBYTERIAN CHURCH, BERKELEY

Camp and War Emergency Buildings

EACH of our great war camps has its Y. W. C. A. "Hostess House"; a place where soldiers in training may meet their families, where women visitors to the camp may rest and refresh themselves, and in emergency find a night's lodging.

The building usually consists of a large social hall, a cafeteria, cloak rooms and lavatories, a few sleeping rooms, and the service and administrative offices.

For the sake of the men who must spend nearly all their time in and about the bald and ugly barracks, as well as for guests, it is particularly desirable that the Hostess House have as much homelike quality as its uses and the available funds will permit. The Hostess Houses at Camp Fremont and at Camp Kearny are of light frame and board and batten construction, in fact no more extravagant in the use of lumber than the barracks themselves. Both exteriors and interiors have been painted light tans and grays enlivened with a few touches of brighter color in parts of the woodwork and in the hangings and lanterns.

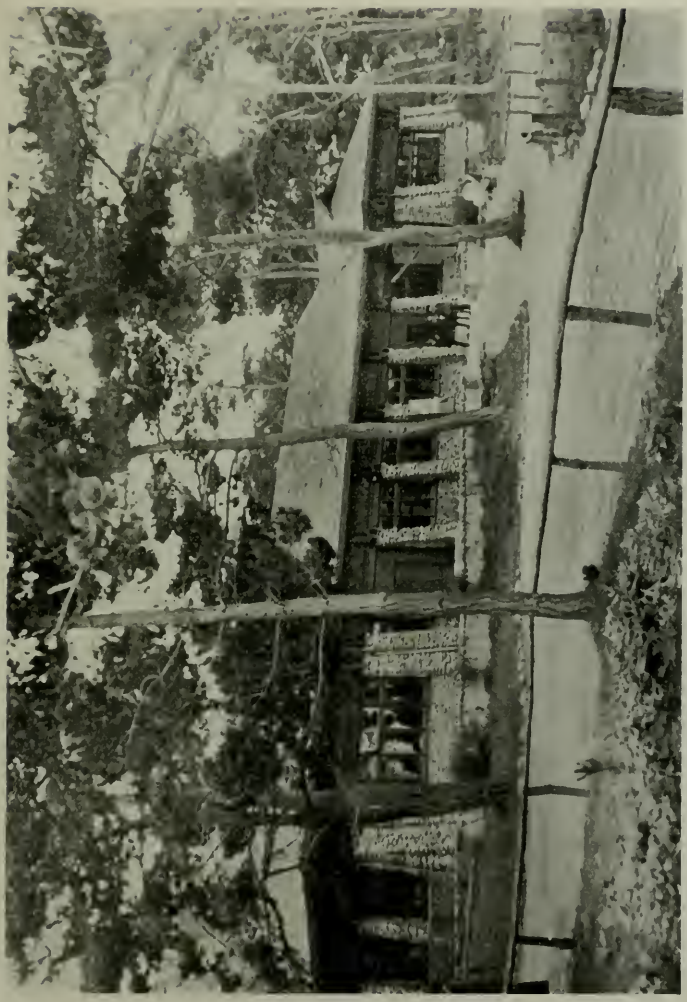
The large group of camp buildings for the National Board of the Y. W. C. A. at Asilomar on Monterey Bay is designed for the use of summer and winter conferences of various organizations and for girls' outings.

The site is heavily wooded with pines which extend down to the beach itself The main buildings of the group, the social hall, dining hall, and chapel, are placed about a natural, nearly circular and level campus in the edge of the woods and sheltered from the ocean by the sand dunes, with a single fine opening seaward. The other buildings, providing sleeping accommodations for about 500 people, are disposed informally among the trees further back from the shore. The principal buildings have walls and piers of a greyish stone gathered from the fields nearby.

The large halls are spanned by heavy wood trusses and practically all of the timber construction is exposed, itself forming the interior finish.

CONFERENCE GROUNDS FOR THE Y. W. C. A.
ASILOMAR. GROUP PLAN

SUMMER CAMP FOR THE
Y. W. C. A., ASILOMAR, LODGE



SUMMER CAMP FOR THE Y. W. C. A.
ASILOMAR. SOCIAL HALL

Y. W. C. A. HOSTESS HOUSE
CAMP FREMONT

Y. W. C. A. HOSTESS HOUSE,
CAMP FREMONT

More Constructive Criticism

By CHARLES CRESSEY, Architect.*

THERE is hope for the cause of architecture, when two such thoughtful contributions as "Constructive Criticism" and "The Architect in Industrial Building" can be produced in war times.† The charm of language and the obvious concern of the writers for their fellows almost disarms an attempt to criticise the critics.

Mr. Wenderoth and Mr. Kahn are uniform in the trend of their arguments and each adopts the standpoint of men of large affairs, having bigguns for clients, and the continent as a field of action. That standpoint is interesting and educational, but is by no means representative or typical of the architectural problem today. There is an irresistible suggestion of a certain vaunted war machine in the ideal designing and building corporation, recommended by our critics, and the logical extension of their plan, is a central station for the United States, manned by supermen, pouring wisdom and plans to distributing points on every strategic corner of cities at large. Dickens has been a long time dead, and there is now little reason for using the Pecksniffian model, every time a writer wishes to illustrate a typical architect. That bogey is scarcely less a fixture in the minds of architects than in the convictions of the public and is more a fiction today than when first invented. The fool and pretender probably exists less in our vocation than in most others, and one constructive criticism is, to stop building efficiency schemes on the assumed inefficiency of the rest of us.

My brothers-in-arms as a body, have always appealed to me as emphatically practical and far-seeing men, ahead of, rather than behind the times, and having a wholesome contempt for the weakling and incompetent. Because architects are at times conservative in accepting new things at their face value, suggests their having been bitten before, when too liberal and receptive. The business efficiency of architectural offices is usually good and well adapted to the volume of work done by each. This matter of volume, is the real issue and is the rock on which corporation schemes crash when slack times fail to support the organization and overhead. The private office system has in the past, appeared to weather stormy times much better than the all-inclusive departmental plan and with no worse results at other times.

After all, one must recognize that the mass and bulk of architectural building today, consists of moderate sized jobs, generally intricate individual problems, which have in the past been successfully handled by individual architects, who though far from experts in all branches have the all-around ability to grasp and group practical requirements. An unrecognized chain of associates surrounds every private office—financial, promoting, real estate, insurance and bonding, engineering and so on,—businesses running on distinct lines, but "business getters" for each other because of their mutual respect and trust. No self-contained corporation equals it, for "to have friends one must be a friend" naturally and unselfishly at that. The work which attracts or is attracted to the architectural corporation, seems to end automatically or by intent, in easily repeated units, which loom large in combination and form advertisements out of all proportion to the power of design or the building acumen involved. The absence of body to kick or soul to damn, in a corporation is a feature for the

*Quayle Bros. & Cressey, San Diego, California.
†In Architect and Engineer for August and September, 1918.

individualist to envy at times. Platitudes on sketchy architects with enticing things on paper—autocratic assumptions—and contemptuous attitudes,—surely have no force applied to those past puppyhood, whilst the "artistic superman" or "ardent idealist" is an overworked type in argument, and rare enough to forget, in serious discussion.

The critics appear to demand a list of all the associates in a building enterprise, every time an architect is mentioned. Has the architect no right on earth? Who is first and last on the job? Who finds endless trouble every time some so-called expert misses his guess? Who nurses and comforts every sore head, brings selfish interests into line and carries a job around his neck for years? Who indeed should be an autocrat, if not the architect? The trouble is, that his training and habit of seeing several solutions to a problem, inclines him to compromise, and robs him of the bull-headed insistence of the man with one interest to serve and possessed of but one idea on a subject. For true autocracy watch the engineer, and in his field of action you will find little doubt as to who is "boss" on the job, hence his good standing, governmentally, and otherwise.

The architect as a rule deals with more conflicting interests and variable conditions, and autocracy must yield to diplomacy, with some loss of prestige in the public eye. The wonder is, not at the little Mr. Architect knows, (and his consciousness of it) but in the amount of good work done on an ill-proportioned time allowance. The architect is a general in the building army—demand loyalty and respect for him, as such, and the tone of the army itself rises immeasurably. The engineer does his part and others do theirs, as is their duty,—but the plan of action,—the cohesion of forces—the active flexible control guiding a building to its close—is the work of the architect. Whether in private or corporate office, successful architecture is personal and springs from one mind,—however that mind may be supported and advised in detail by others. Study the work left incomplete in design by able architects who have died in harness, and note the change of personality and jarring notes in the building. The more mechanical callings are less obviously personal and creative, and Ford-like ideals on efficiency are more likely to break than to make good architecture.

Even in industrial buildings, examples by personal offices stand comparison with "organization" efforts, in either practical plan, honest design, or executive handling. Incidentally, is there not a possibility that the attenuated concrete and steel sash cult, is running away with its friends. People in those glass houses must sometimes feel like throwing stones—at the enthusiast who blinds them with glare, loads them with depreciation and paint charges, some danger, and a be-dirty-for-ever alternative to constant cleaning. Examples of over-lighting and shops almost useless, before painting out superfluous glass, counterbalance the quoted instances of under-lighted Collegiate Gothic rooms. Good as the steel sash system is, in California at least, care is needed before adopting glass-by-the-acre design. Mother Architecture cares nothing at all that her sons (and daughters) dub themselves artists, follow a profession or a business, or swagger around as fully developed corporations.

Let us learn to respect ourselves, cease crying "stinking fish," and proceed methodically to teach the rising generation what is the work and scope of the architect, and all included in our ancient craft. We may gain for those who follow us, an understanding public, and by ideals well taught, raise and restore architecture and ourselves.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

THE
Architect and Engineer
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PROFESSIONAL ETHICS AND ADVERTISING

Now that the American Institute of Architects has lifted the ban on advertising—it is no longer considered unethical for an architect to advertise — the American Society of Civil Engineers may be expected to follow a similar course. It is evident that the time is not far off when both architects and engineers will advertise themselves with as much display as the contractor and material man, and why not? The only objection that we have heard to one form of advertising—that of placing the architect's name and address on a building under construction—is that it "commercializes the profession too much." The architect would prefer not to have his name associated with those of the contractor, the cement dealer, the marble supply house, etc.

Our attention was called the other day to several business and profession cards hung on the outside of a building under construction in lower Market street, San Francisco. Besides the general contractor's name, there was a separate placard of the architect and another for the engineer. This is the first time we have noticed an engineer's sign and we think it indicates the right spirit, since heretofore the name of the engineer who has designed the structural part of a building (under the direction and at the expense of the architect), has been kept in the background. The general public usually has been given the impression that the building was designed architecturally and structurally by the architect.

That the engineering profession appreciates the situation and is not going to permit itself to lapse into further obscurity, is indicated by the following bulletin sent out by the Oregon Society of Engineers, urging that they not only advertise themselves, but their accomplishments:

[Continued on page 118]

THE PROFESSION AND THE BUILDING TRADES SHOULD PLAN NOW FOR THE FUTURE

The world's greatest of all wars is over. For four years it has been waged with appalling disaster—more than ten million lives have been sacrificed and one hundred and fifty billions of dollars have been expended. It will take many months before we shall again have normal conditions, but the future no longer holds forth that uncertainty, that fear, which stayed the activity in all things other than those which contributed for the winning of the war. From now on we may plan and prepare for the future with every assurance of an early realization of our efforts.

Probably no industry in the United States has been harder hit than the building trades, and no profession has suffered more than the architects. Construction work, aside from that which the Government deemed essential for the winning of the war, has for months been at a standstill. Building material houses have either closed down altogether or are struggling along with depleted forces; great lumber yards and planing mills have been idle except for the handling of essential work; the iron and steel shops have been busy only on shipbuilding necessities; the clay products and the cement industries have been forced practically out of business—and so on down the line. But the sacrifices and losses which these people have suffered have not been in vain. The victory which has been won has more than recompensed those who have suffered.

As to the future—it is going to be largely what we make it. The opportunity will be there. The shipbuilding industry, which has in a very large measure been responsible for disrupting other lines of building, may be said to have reached its pinnacle, and with its decline there will come new life to the general building industry. It may be a month and it may take several months before the Government will entirely suspend the present building restrictions. Already the ban has been removed to some extent. Right now is a splendid time to prepare for the future. The firms that are ready will be the ones most likely to receive the greatest benefit when the country again falls into its normal stride. It is believed that San Francisco is on the eve of a building boom the like of which has not been seen since the memorable days of reconstruction that followed the great fire of 1906. There is much necessary building to be done. For nearly a year it has been "patch work"—and improvements have all been of a temporary character. New commercial buildings, office structures, public buildings, apartments, are all needed, badly needed, and it remains only for the Government to completely release the restrictions and for the banks to resume loaning money when the construction revival will begin. The banks may be requested to withhold loans for large building enterprises until after the final Liberty Loan. In this case heavy construction would probably not be permitted before spring. This would be a very satisfactory time, since there is seldom much activity during the rainy season. As concrete evidence of an approaching boom, one prominent San Francisco architectural firm is reported as having three million dollars' worth of work—office and commercial buildings—that will go ahead in the spring. The plans already have been started.

It was not so many months ago that we heard some architects and builders deploring the fact that they had neglected to choose other walks of life for their livelihood. Today these same men, in fact all of us, are glad, so glad, that we are architects and engineers and builders, for there is no profession and no business in the world that holds forth a more promising future!

Just American

Just today we chanced to meet—
Down upon the crowded street;
And I wondered whence he came,
What was once his nation's name.

So I asked him, "Tell me true,
Are you Pole or Russian Jew,
English, Scotch, Italian, Russian,
Belgian, Spanish, Swiss, Moravian,
Dutch or Greek or Scandinavian."

Then he raised his head on high,
As he gave me this reply,
"What I was is naught to me,
In this land of Liberty,
In my soul as man to man,
I am just American.
—*Author Unknown.*

Recreation Building

Mr. A. C. Martin, 430 Higgins building, Los Angeles, has prepared plans for a frame recreation building to be erected on Goat Island, San Francisco Bay, for the Knights of Columbus Lodge. It will be about 40x110 feet in size, divided into a chapel, reading room, officers' quarters, etc.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. Atholl McBean, of the Gladding, McBean Company, and well known by the architectural profession throughout the Pacific Coast, has returned to San Francisco after an absence of nearly a year in war work abroad. Mr. McBean was for six months head of the Bureau of Personnel, Pacific Division, American Red Cross, with headquarters in Switzerland, where he was in charge of organizing the Red Cross prisoners' relief work. Mr. McBean says that prior to signing the armistice there were about 5000 American soldiers distributed among the various prison camps in Germany.

Mr. Percy A. Eisen, architect of Los Angeles, and Mr. Reginald D. Johnson of Pasadena, were among the hundred or more officer candidates who reported at Ft. MacArthur, San Pedro, the first of the month for service in the Coast Artillery. Mr. Pierpont Davis another Los Angeles architect, has also enlisted in the same service. The Coast Artillery is the heavy artillery branch of the army and the officer candidates are training for overseas service. Preliminary training will be given at Ft. MacArthur.

Miss Julia Morgan of San Francisco, has been appointed advisory architect of the National War Work Council of the Y. W. C. A., with headquarters in New York city. Miss Morgan will supervise the designing of all new hostess' houses that may be built in the various training camps of the country.

Lieut. Charles H. Biggar of the United States Engineers Corps is now in France. Lieutenant Biggar was formerly engaged in the practice of architecture in Los Angeles and later in Bakersfield. He studied architecture in Paris and writes that he has found his knowledge of the French language very helpful.

Mr. E. C. Noyes, formerly district manager of the Truscon Steel Company in San Francisco, died at Philadelphia, Pa., on October 23, of influenza. Last April he resigned his position and went to Philadelphia in the service of the Emergency Fleet Corporation.

Mr. J. W. Sussex, architect and engineer of Peshastin, Wash., has received an appointment from West Point as superintendent of construction of the United States Military Academy.

Mr. Walter S. Davis of Los Angeles is now in the camouflage service with the United States Expeditionary Forces in France. Mr. Davis went to France as interpreter attached to a regimental staff and later secured a transfer to the camouflage service.

Major J. A. Mannington, formerly structural engineer in the Los Angeles city building inspector's office, who has been seriously ill for several months in the hospital at Camp Dodge, Iowa, has arrived at his home in Los Angeles on a furlough. His leave of absence extends to January 1.

First Lieutenant O. W. Morgan, of Los Angeles, is at Ft. Douglas, Salt Lake City, with the 403rd regiment of the United States Engineer Corps. Lieutenant Morgan is junior member of the architectural firm of Morgan, Walls & Morgan, Los Angeles.

Captain John Baur, a San Francisco architect who was one of the first to respond to the call of Uncle Sam, is secretary of the Aviation Signal Corps at the Vancouver Barracks, Washington.

Mr. Homer W. Glidden, architect of Los Angeles, has been ordered to report to the officers' training school at Camp Taylor, near Louisville, Ky., for service in the United States field artillery.

Mr. W. Templeton Johnson, formerly a practicing architect in San Diego, is in the East working for the United States Housing Commission.

Mr. Wm. H. Allen of New Haven, Conn., was a recent visitor in Los Angeles. Mr. Allen designed the present Chamber of Commerce building in the Southern city.

Mr. Sumner Paine, a Seattle draftsman in the city's employ, has been appointed assistant acting-engineer by the city council of Everett.

Mr. Alfred D. Butler, city engineer of Spokane, has left for Washington, D. C., to accept a position with the construction division of the war department.

Mr. Wm. G. Mann, architect of Seattle, is rejoicing over the arrival of a son and heir at the Mann home.

Mr. George A. Applegarth, architect of San Francisco, has recovered from a severe attack of the influenza.

Mr. Thomas B. Wiseman, architect of Bakersfield, formerly of Los Angeles, is recovering from a severe attack of influenza.

Class C Store Building

Mr. T. Franklin Power, 333 Higgins building, Los Angeles, is completing plans for a two-story and part basement Class C apartment and store building to be erected on the southwest corner of North Broadway and Griffin avenue, for Mrs. Francesca Jesurum, 635 Consolidated Realty building, Los Angeles. The building will be 141x106 feet in size and will contain six stores on the first floor and forty-five rooms on the second floor, divided into two and three-room suites. There will be a sunroom and laundry on the roof and storage and locker rooms in the basement.

Architects Doing War Work

The architectural firm of Knapp & West have closed their office. Mr. Knapp is engaged in shipbuilding work at Portland, Ore., and Mr. West leaves shortly for Seattle, his former home, where he will plan a hotel building and houses for a Seattle shipyard. When peace has been declared the firm will return to Tulsa to finish the ten-story Odd Fellows Temple and a large apartment house.

S. F. Chapter Annual Meeting

The annual meeting of San Francisco Chapter, A. I. A., was held at the Palace Hotel, October 17, when the following officers were elected:

President, Sylvain Schnaittacher; Vice-president, William C. Hays; Secretary, Morris M. Bruce; Directors for three years, William Mooser and W. B. Faville. The ho'd-over directors are Mr. Chas. Peter Weeks and August G. Headman.

Architect Dies of Influenza

Mr. J. Henry Boehrer, an Oakland architect, died in that city the past month, after two days' illness, of Spanish influenza. Mr. Boehrer was 34 years old. At one time he was associated with the late Ralph Warner Hart and with the latter he designed the Odd Fellows Home near Los Gatos. Mr. Boehrer was also architect of the Odd Fellows Hall on Franklin street, Oakland. He was himself, a prominent member of that fraternity.

Los Angeles Chapter, A. I. A.

After the usual summer recess, the Southern California Chapter of the American Institute of Architects has resumed regular meetings in conjunction with a dinner, the meeting being held on November 11th. The revised constitution and by-laws have been adopted. These provide for the fiscal year of the organization to commence on the first of the year, consequently the present fiscal year has been extended to December 31st. The annual election of officers customarily held in October will hereafter be held at the December meeting.

S. F. Chapter Honor Roll

San Francisco Chapter, A. I. A. recently indicated its appreciation of the patriotism of the Chapter members who have entered the service of their country by spreading on the minutes the following names:

ALLEN, HARRIS C., in the United States Army.

*

ANTONOVICH, E. P., in the United States Army.

*

BAUR, JOHN A., in the United States Army.

*

BAKEWELL, JOHN JR., in the Red Cross.

*

COXHEAD, ERNEST A., in the Young Men's Christian Association.

*

GEORGESON, F. T., in the United States Army.

*

HATCH, JOHN DAVIS, in the United States Army.

*

HOWARD, JOHN GALEN, in the Red Cross.

*

NORBERG, ERNEST, Lieutenant, in the United States Army.

*

NICHOLSON, A. D., in the British Army.

*

NEWSOM, SIDNEY B., in the United States Army.

*

PARKER, WALTER H., in the United States Army.

*

RAIGUEL, W. O., in the United States Army.

*

REED, WALTER D., in the United States Army.

Work Stopped on Liberty Plant

The $20,000,000 Liberty shipbuilding plant at Alameda, will not be built. The government has cancelled its contract with the Aberthaw Construction Company. One or two of the 20 or more buildings proposed had been erected, in addition to pile driving, when the order to cease construction work was received. One of the buildings completed is an office structure, in which a large number of draftsmen were employed, making details for the new plant. Some of these draftsmen were architects who had temporarily given up their practice in San Francisco and other California cities. The order to abandon the new plant was generally accepted as a sure indication of the early termination of the war.

Group Plan For Hospital

Mr. Henry H. Meyers, arcihtect in the Kohl building, San Francisco, has the plans well in hand for the proposed down-town hospital in Oakland. An appropriation of $300,000 has been made by the supervisors of Alameda County. The hospital is to be built on the group plan, all buildings to be frame with plaster exterior and one and two stories high.

Polk Suggests Art Home as Memorial

"There is only one danger in connection with the plan to build a memorial to our soldiers and sailors who have fallen in this war," said Mr. Willis Polk, the well known San Francisco architect in accepting a place on the Memorial and Monument Committee. "Very soon every city and town in America is going to build a monument to its dead heroes and there will inevitably be many cheap and unworthy edifices raised.

"San Francisco has been first to start such a movement. Let us see that her citizens build a memorial worthy of her name, her history and the heroism of her sons. It should be something great and wonderful, something dominant in its beauty and strength—not one of the conventional atrocities with which the world is already littered.

"Personally, I prefer a location on the water front to Golden Gate Park. At the end of the transcontinental highway—Lincoln Park, for instance—an imposing memorial might be erected. Telegraph Hill would afford another excellent site, and Twin Peaks a magnificent one * * * but, after all, I am most inclined toward something that the people would love, and by which they would benefit.

"For such a purpose, what could be better than a permanent Palace of Fine Arts on the site of the present one, which is slowly crumbling away—which seems to me always holding out mythical hands in a pitiful appeal for restoration, perpetuation?

"There is nothing San Franciscans love more than this structure, which has been called the world's most beautiful modern building. It could be made a splendidly imposing and appropriate tribute to our dead sons, with its wonderful peristyle, along which might be placed tablets with the names of San Francisco's heroes. And it would perpetuate not so much the sadness of our loss as the glory of our pride in the delight it would give both as a building and as an art gallery.

"This proposition, which would provide for a completely new, permanent memorial building, would cost about $2,000,000. That would, at the proper time, be a small matter to San Francisco. Why, if every one in this city who bought a Liberty Bond will give one coupon toward the memorial fund, the necessary amount is assured."

Build a Venice on Liberty Site

Twenty thousand wooden piles were driven on the Alameda water front by the contractors of the Liberty ship plant. Now that the building of the plant has been given up, the public is wondering what is going to become of the property. So many piles in the ground will of course make the planting of vegetables impossible. Some enterprising speculator might take an option on the property and build a miniature Venice.

William Mooser Busy

Mr. William Mooser, architect in the Nevada Bank building, San Francisco, is one of the few architects whose practice has kept up during the period of the war. Mr. Mooser has been fortunate in having clients whose industrial activities have expanded through war conditions and whose plants in consequence, have needed to be enlarged. Recent work of this type in Mr. Mooser's office has included alterations to a three-story Class C store and loft building at Front and Halleck Streets for the Louis T. Snow Co., and alterations to the candy factory of D Ghirardelli, at North Point.

Judgment For Contractor

Mr. J. V. McNeil, who was the general contractor of the Class A office building erected at Eighth and Broadway, Los Angeles, for Mr. Hulett C. Merritt, recently secured judgment in the Los Angeles County Superior Court against the owner for approximately $24,000. After the contract was let to Mr. McNeil many changes were made in the plans of the building, resulting in claims for extras amounting to many thousands of dollars. The contractor insisted upon and obtained written orders for all changes and these were made the basis for a suit when Mr. Merritt refused to pay the extra charges.

Honor for Mr. Cheney

Mr. Charles Henry Cheney, architect and city planner, has been commissioned to prepare plans for a new zoning and housing scheme for the city of Portland, Oregon. Mr. Cheney has already entered upon his duties, spending a week or more each month in the Rose City. He is receiving splendid collaboration from the Portland Chapter, A. I. A.

Convention of Iowa A. I. A. Postponed

The sixteenth annual convention of the Iowa American Institute of Architects, which was to have been held at Ottumwa, Iowa, October 24 and 25, has been indefinitely postponed. Members are urged to use the additional time to make further preparation to hold a better meeting.

San Francisco School Building

Plans are being prepared in the office of Mr. John Reid, Jr., San Francisco architect, for a two-story frame school house for the City and County of San Francisco, to be built on Corbett Avenue and to be known as the Twin Peaks school. An appropriation of $20,000 is available.

Marble Contract Awarded

The Joseph Musto Sons-Keenan Company, 535 North Point street, San Francisco, has been awarded the contract for all marble work in the five-story addition to the Mills building, San Francisco, from plans by Mr. J. S. Bogart.

Architects and Draftsmen Wanted by The Government

THE United States Civil Service Commission has just been asked to fill vacancies in the construction division of the War Department for the following: Architect, salary $2,500 to $3,500; structural designer, $2,400 to $2,700; architectural designer, $2,100 to $2,700; senior structural draftsman, $2,000 to $2,400; junior structural draftsman, $1,500 to $2,000; junior architectural draftsman (male or female), $1,200 to $1,800; architectural tracer (male or female), $1,000 to $1,200.

Competitors will be rated upon the sworn statements in their applications and upon corroborative evidence adduced by the commission, and will not be required to report for an examination. Their standing will be rated on 50 points for education and preliminary training and 50 points for experience. Applications should be filed at once with the civil service commission.

The duties of the various positions to be filled are defined as follows:

Architect—Designing of housing, hospitals, cantonment buildings, theaters, refrigerating plants, warehouses and other projects. Each appointee will have charge of a group of draftsmen. Applicants must have graduated in architecture from a college or university of recognized standing and must have had at least twelve years' experience in responsible charge of designing and supervision of architectural work.

Structural Designer—Designing heavy wood frame mill and warehouse construction, light steel frame buildings and reinforced concrete warehouses; also power houses, boiler houses and special construction for the housing of manufacturing equipment and machinery. Applicants must have graduated in civil or architectural engineering from a college or university of recognized standing and must have had at least eight years' experience.

Architectural designer—Designing and supervision of housing problems and preparation of plans and specifications for hospitals, power houses, warehouses, cantonment buildings, mechanical repairing of shops and other work. Applicants must have graduated in architecture from a college or university of recognized standing, and must have had six years' experience.

Senior structural draftsman—Making of structural drawings and details for mill construction, light steel frame; reinforced concrete, and other buildings. Applicants must have graduated in architectural or civil engineering from a college or university of recognized standing and must have had six years' experience.

Senior architectural draftsman — Designing and planning wood frame, concrete and fire-proof buildings and developing plans for elevations from rough sketches. Applicants must have graduated in architecture from a college or university and must have had five years' experience.

Junior structural and architectural draftsmen—Must have graduated in civil engineering or architecture and must have had at least two years' experience.

Architectural tracer—Applicants must have graduated from a high school and must have had two years' experience as tracer in architect's office.

Distinguished Architects Visit Coast

Two distinguished architects recently paid San Francisco and Portland, Oregon, a visit. They were Mr. Frank Lloyd Wright of Chicago and the Hon. Frank R. Haworth, a London architect.

Mr. Wright has prepared plans for a $1,000,000 hotel which he is to build in Tokio for the Imperial Hotel Company, Ltd., which is controlled by Arsaku Hayashi, its managing director. Two years ago Hayashi studied the fine points of San Francisco's three large hostelries before instructing Mr. Wright to go ahead with plans.

Mr. Haworth has a commission to build a modern hotel in Calcutta and he is going there to study the situation before finishing his plans.

Predicts Banner Year

Mr. James W. Reid, of Reid Bros., architects in the California-Pacific building, San Francisco, predicts a banner year in building construction for San Francisco in 1919. Heavy construction will start, Mr. Reid thinks, immediately following the final Liberty Loan in the spring, when the banks will commence to make building loans. Reid Bros. expect to have at least one millions dollars worth of new work; in fact, they have assurances of this much already. The list includes office buildings, commercial buildings and apartment houses. Among the office buildings there will be a ten-story Class "A" structure in lower Market street for the Matson Navigation Company.

Praise for Mr. Alliott

In connection with Mr. Withey's article in the October number of The Architect and Engineer, describing some of the work shown at the Architectural Exhibit recently held in the Metropolitan building, Los Angeles, credit should be given the California Liberty Fair, under whose auspices the exhibition was held. The display was arranged by the Fine Arts committee, of which Mr. Hector Alliott was chairman, and he is entitled to not a little praise for his efforts in making the affair such a splendid success.

Engineering Officers

The United States Navy Department has perfected plans for the training of a considerable number of engineering officers. A school for this training known as the United States Navy Steam Engineering School, has been established at Stevens Institute of Technology, Hoboken, N. J.

The course consists of five months of training, divided as follows:

One month of training at the Naval Training Camp, Pelham Bay Park, New York.

One month of technical work at the United States Navy Steam Engineering School, Hoboken, N. J.

Two months of practical training on board ships and in shops in the vicinity of New York City.

One month finishing course of instruction at the United States Navy Engineering School.

Application may be made to the following Navy Mobilization Stations for induction into naval service and assignment to the United States Navy Steam Engineering School: San Francisco, Cal., 742 Market Street; Los Angeles, Cal., Union Oil building; San Diego, Cal., American building; Seattle, Wash., Seattle National Bank building; Portland, Ore., Dekum building; Salt Lake City, Utah, Keith Emporium building; Denver, Colo., Quincy building.

Fell Trees by Compressed Air

Mr. Frank H. Lamb, of the Wynoochee Timber Company, Hoquiam, Wash., has prepared a paper for the Pacific Logging Congress, on the possibilities of the use of compressed air in providing power for mechanical felling of timber. Mr. Lamb says it may be necessary to back up from the idea that trees can only successfully be felled and bucked with a saw and axe. It may be found possible to design a pneumatic tool or tools, in the form of a chisel, which may be successfully employed in tree cutting. The advantage of compressed air as a means of power is pointed out by Mr. Lamb as being the most convenient form of power. Air is easily transmitted and does not lose its energy through transmission if there is no leakage in the pipe line.

Architect Turns Mechanic

Mr. John Graham, in normal times one of the busiest architects in Seattle, has turned his talents in another direction for the period of the war. As president of the Paragon Tool Company he is doing his "bit" to help win the war, the company having taken contracts to manufacture small tools, bolts, studs, etc., for practically every shipyard on the Pacific Coast. When the war is over, Mr. Graham will return to his architectural practice.

Pier Work Delayed

Work on the new reinforced concrete municipal pier at Manhattan Beach, Los Angeles, was delayed about ten days by an accident which precipitated one of the 24-ton hollow concrete piles, the derrick and rigging used in handling it, and several tons of cement into the ocean. The concrete pile was suspended horizontally and was about to be swung into an upright position when one of the ropes broke and the pile started to sway. The momentum of the swinging pile toppled over the derrick carrying it into the ocean. Fortunately only a part of the falsework was torn away.

Ship Contracts Cancelled

Contracts for the construction of troopships, at a cost of $60,000,000, by the Bethlehem Shipbuilding Corporation at its Alameda plant on the Oakland estuary, have been cancelled by the Federal Shipping Board. It is said to have been found that construction of ships designed particularly for the transportation of troops from Europe to the United States at the end of the war was unnecessary as plans have been made for the conversion of steel freight vessels into troopships.

Contract For Wrought Iron Work

The California Artistic Metal & Wire Company, 349 Seventh Street, San Francisco, has been awarded the contract to furnish and install all wrought iron work and elevator enclosures in the Spreckels Security Company's building now being remodeled and enlarged at Pine and Davis Streets, San Francisco, from plans by Mr. Geo. A. Applegarth.

Buttonlath Manager Dies

Lieutenant William Lawrence Peters of the U. S. transport service, died in October of pneumonia, following an attack of influenza, at the officers' training camp at Ft. Johnson, near Jacksonville, Fla. Mr. Peters was former president and manager of the Buttonlath Manufacturing Company of Los Angeles, which position he resigned to enter the service.

New Movie Plant

Among the Government permits which have been issued is one to the Metro Motion Picture Company of New York City, for the removal of its plant to Los Angeles. The removal will necessitate construction work in Los Angeles amounting to approximately $225,000. All of the buildings will be of wood.

Store Fixture Work

Mr. C. E. Gottschalk, Phelan building, San Francisco has completed plans and let contracts for new store fronts and fixtures at 137 Geary street, for the Hannan Company of New York.

Professional Ethics and Advertising

[Concluded from page 110]

"Maybe you noticed that we had a big tractor demonstration near Portland a little while ago. Or maybe you were in that comatose condition which engineers assume when working out some highly technical problem (getting the results down to a logarithm of a gnat's eyebrow, when a good guess would have answered the purpose much better), and failed to grasp the significance of this gathering of farmers and machinery salesmen.

"What did they do?

"A group of men who have tractors for sale banded together to arouse interest in tractors. And they aroused interest.

"It seems to me that engineers could use similar methods in advertising engineers and engineering.

"That would be unethical, would it?

"Does a goodly helping of ethics give you that comfortable feeling in the neighborhood of the belt that is induced by a substantial meal to which you treat yourself on returning from a good job well done? Don't you really prefer to be busy with profitable work than to sit in your office quietly reading the code of ethics?

"Well, then, look here.

"Forget for the time being that I can't design a concrete building as quickly as you can, and I'll overlook for the present the defect in your training which leaves you in blissful ignorance of some of the problems in sanitary engineering with which I have been crowding my brain between Bulletins. And we will both of us lose sight of Smithson's shortcomings in the field of city surveying. He can do things with machinery which make us both open our mouths in wonder.

"Let us all get together and advertise engineers.

"The public is woefully ignorant about our work, and if I speak slightingly about you and Smithson, and each of you take pains to spread the information that I never designed an automatic change making machine, nor a twelve story building, are we not all equally to blame for our poor standing professionally?

"Will not we be just about nine times as far ahead if we all work together as if each tried to advance himself by clambering over the prostrate forms of the other two?

"The tractor men got the farmers to think about tractors. That was the main thing. After that is accomplished each may tell the virtues of his own machine for the particular kind of work for which it is fitted.

"Let engineers get the public to thinking more about engineers. There will be work for all when people know what we can do better than non-technical men."

Million Dollar Bank Building

One of the first building projects to be started in San Francisco with the ending of the war will be a million dollar bank building on the site of the present Techau Tavern, at the northwest corner of Eddy and Powell streets. The Bank of Italy has purchased this property for $800,000 and, according to Mr. Douglas, one of the managers of the bank, work on the plans for a new building will be started inside of the next thirty days. It is figured it will take six months or more for the preparation of plans and razing the present structures on the site. The new building will have a frontage of 65 feet on Powell street and 150 feet on Eddy street. It will take at least a year to complete the structure.

Bank officials now have under consideration two schemes for a building, one calling for an ornate banking structure to be occupied exclusively by the bank and to be built of granite and marble; the other scheme is to construct a skyscraper of from ten to fifteen stories with banking rooms on the ground floor and the upper floors divided into offices. The selection of an architect will be made shortly. It is understood the bank is very well pleased with the services of Mr. R. F. Felchin of Fresno, who designed the Bank of Italy building there. Other architects who have done work for the bank are Messrs. Will D. Shea, Shea & Lofquist and Clarence A. Tantau.

Charles M. Rousseau Dead

The death of Mr. Charles M. Rousseau, pioneer architect of San Francisco, occurred at his home, 1903 Webster street, San Francisco, November 15, at the age of 70 years. Mr. Rousseau came to San Francisco some thirty years ago from New York. He was vice-president of the firm of Rousseau & Rousseau, Mr. A. F. Rousseau, a son, having taken over the most active part of the firm's affairs in the capacity of president.

At the time of the Midwinter International Exposition in San Francisco in 1894 Mr. Rousseau was awarded two silver medals for architectural designs exhibited and for services as juror in the department of liberal arts.

The deceased is survived by his widow, Mrs. Fannie Rousseau; three sons, Charles J., Arthur F. and Oliver M. Rousseau, and four daughters.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Contracting: Its Ills and Cures

By W. A. KLINGER, Secretary Concrete Builders' Association of Milwaukee

ALMOST eight years ago I was released from the State University as a civil engineer. For a year following I taught at the University, then deciding that I preferred a more exciting existence, I became a contractor. I got the exciting existence.

I had the popular idea that all you needed to become wealthy was to start contracting. I have been cured of that idea. I came to the contracting profession fresh of mind, not bound by any knowledge or custom gained by employment on some other contractor's staff—a mind free to conduct a contracting business as I thought it ought to be conducted. Now, after six years of more or less intense activity, I am stopping to take a deep breath and think, and as I review my particular activities as a contractor, I find the following to be true: Our firm has had some small measure of financial success, but not anywhere near what we expected, not anywhere near what we consider a reasonable compensation for the amount and quality of the work we have completed, the chances we took and the energy we have consumed. I believe our competitors will verify my statements when I say that we have conducted our business so as at all times to command their respect. We have made a few enemies, principally among a certain class of the architects who object to what they call our technical or financial attitude, and what we call a defence of our rights. We are firmly convinced that, had we put an equal amount of capital, an equal amount of training and an equal amount of energy in almost any other line of business, our success would have been much greater.

Let us examine this profession of contracting, and expose its ills. We will find that they are many. In fact, each of us in making a diagnosis will discover that the ills are legion, but I believe that they can be grouped under three major afflictions. Cure the contracting body of these three afflictions, and we will have a healthy profession, a good profession, and above all, one for a real man to follow.

Illness number one is that the profession has no standing. The contractor does not command the respect of his community as does a professional or business man in other vocations. It seems to be a foregone conclusion that we are in the business to put it over on somebody. In no other business is it true as it is in ours that there is a buyer, a seller, and then a watchdog. We grant that the architect, has a place in the building world. His is to plan a building and see that that plan is executed. But it should not be to watch for crooked work, it should not be the counting of the sacks of cement consumed, it should not be the inspection of lumber to detect inferiority, and then accuse of intent. Probably I can best illustrate my point by an instance from actual experience. Recently we were awarded a small contract by one of the largest corporations in the State. The first morning we were on the job, a young fellow stepped up to my partner and asked "What kind of cement is that?" "Why, that's Marquette," was the reply. He walked away, and after pawing through his specifications for a while, returned with: "You'll have to send that cement away. It isn't the right kind. The speci-

fication says you must use Portland cement." The owner, in this case a large corporation, thinks so little of the builder, that he sets a watchdog on him who doesn't know what Portland cement is, and yet is authorized by the contractor and specifications we sign, to tell us how to proceed with the erection of a building. Such a procedure is an insult to the profession. It could not occur in a profession that had standing. It occurs to builders repeatedly because the supposition usually seems to be that the owner or one of his clerks knows more about the erection of the building than does the crooked contractor, and all contractors in his opinion are crooked. So much for the standing of our profession.

The second serious illness of our profession is that our compensation is too small. Compared with other businesses and professions, our compensation is nothing. The good old days of big profits are gone, and the pendulum seems to have swung to the other extreme and is now registering no profits. With one or two exceptions, in these past three years of record-breaking business, the contractor has not kept pace. He may find that he has done more business than before, but he will also find that his profits are no larger than before. If he stops to think he will find that the man for whom he built has made money; the man who sold him the material has prospered; the men in his employ have bettered themselves; while he is still relatively where he was four or five years ago. In that period some of his competitors have fallen. Some have risen from the dead, only to fall again. And each time there is a bankruptcy in the building business. The profession suffers. It loses prestige. Since 1913 there have been eight business failures of large concrete firms in Milwaukee. There are now nine firms resulting. Competition does not lessen by bankruptcy. Dun and Bradstreet show that general business failures in 1917 were less than any year since 1911. Yet failures among contractors have more than trebled in three years. This is reflected in the price of contractors' bonds, which have risen from one-half of 1 per cent to 1½ per cent. These figures are self-explanatory.

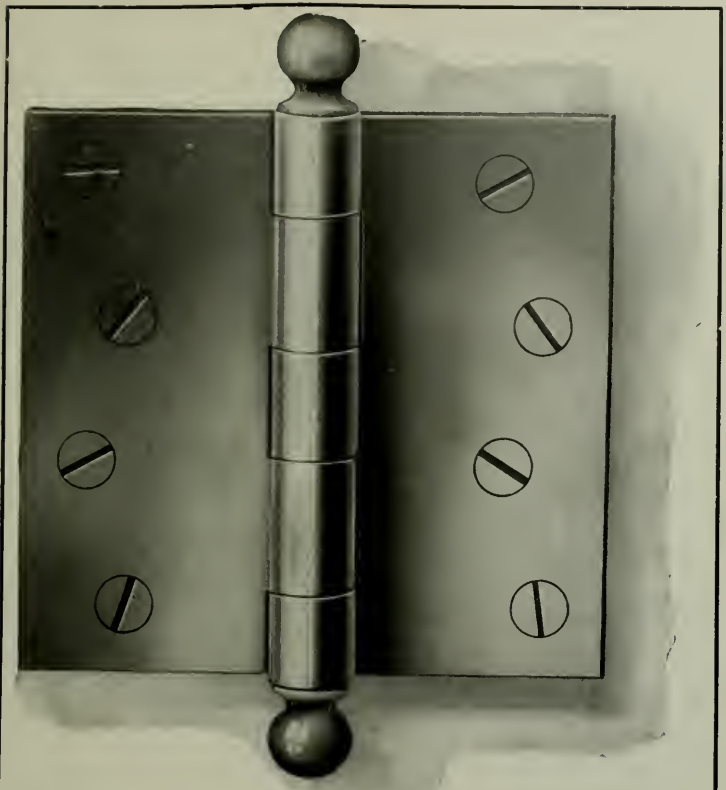
The third and most serious illness, in fact almost a death unto itself, is that contractors are poor business men. We sign contracts that are eminently unfair; that have been devised without representation of the contractors interests; that place us at the mercy of a third party hired and paid by the owner. We have done so without protest, with the sole excuse that if we didn't accept the work on that basis our competitor would. Our contracts specifically state that we are to receive written orders for alterations and extras, and we lose many a dollar by failing to comply with those terms. We uncover mistakes in plans and we invariably are the goats.

Our business savours too much of the gamble, and too little of the scientific cost analysis. Until we get the gambling out, and real cost systems, in, this stream of bankruptcies that aids no one and is a constant source of injury to the profession will continue.

Let us take up the cures in the order that we have taken up the ills. What can we do to give the profession more standing, to raise it to its proper level in the world of commerce and industry? Let's take some pride in our profession. Our craft is the oldest in the world. It began when man first built for himself a shelter in the trees. The progress of civilization is marked by the progress in the art of building. The proudest creations of which the world boasts are the structures that have been make possible by the genius of the builder. Excepting only the ruthless waste of human life, the world's greatest loss, due to the world war, lies in the needless destruction of the wonderful cathedrals and public structures of France and Italy. Remember that contracting is a real man's game, and it takes a real man to play it. Look about you at your competitor, and examine the type of man he represents. You will find something sturdy, something of the fighting man, and much of the leader in him. No other business presents such a complexity. We are manufacturers and our product covers a wide variety. We are merchandisers selling directly to the consumer. No profession is more necessary to humankind. The ability to take a vast assortment of various materials, mostly products of nature, and mould them into a residence, a business building, or a factory, should make us proud of the fact that we are "builders."

Taking pride in our profession, let's turn out better products. The more we put the stamp of quality on our work, the better the reaction on the profession. The more we educate the public to quality, the harder the course of the shyster, who operates in our profession as in all others. If the public knows a good job, the shyster is to create sentiment against him. Place your own business practice above reproach and then get after the shyster. Educate him to your own standards so that he can no longer practise shysterism, and becomes good, and therefore welcome competition, or hound him out by making the continuation of his practice impossible. Exposure is a sure cure for foul practice.

Architects, who are employed as experts by owners should be made to see the light. They should be convinced that it pays both them and the owner to select



AMONG architects there is one butt which is especially and deservedly popular. It is simple in design though of handsome appearance, a clean, plain style of butt that suits nine cases out of ten, and that can be depended on for the best of service.

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Stanley Garage Hardware is adaptable for factory and mill doors.

contractors of standing for their work.

It seems to me that we have all laid too much emphasis on price and too little on quality. We have strong hopes that the system of licensing architects will improve the type to such a point that the argument of quality may have some effect.

To be a contractor will mean more when it is a little more difficult to become a contractor. At present anybody with nerve and the first instalment on equipment can call himself a builder. Anyone of our foremen who thinks he knows more than his boss—and they are all firm in that opinion—becomes a contractor. He operates for a while as a shyster, then either blooms out and justifies his start, or, in nine cases out of ten, kills a whole lot of business for us and then goes to the wall. But there is always somebody to take each vacant place. We can attribute this to two reasons:—

(1) An unjustifiable extension of credit on the part of the material man. The material man unhesitatingly sells to any contractor, knowing he can get protection by virtue of the existing lien law. He quotes to poor pay just as he does to the man who discounts. If he didn't have the ironclad protection of the lien law and sold to contractors according to their credit ratings and their ability to pay, the shyster and the cut-price competitor would have to have a working capital before he could start as a contractor. Consequently he wouldn't start. We can render great assistance and improve our business standing vastly by unhesitatingly complying requests for financial statements. Such requests are not to be considered as insults, or as a prying into our business. They are simply the opening steps to better business relations. Financial statements are used more and more in all lines of business, and it is up to us to unhesitatingly make them on request. He who is not ready to prove himself entitled to credit should not receive any.

(2) Besides financial responsibility, the man who aspires to the building profession should be a real builder. An ability to nail a 2x4 does not constitute a builder. I believe a system of state licensing much as our state law licensing architects should be worked out. The architects expect the licensing of architects to do much to improve the personnel of their profession. A similar law for builders could not do otherwise than improve the personnel of our profession. The test of an applicant for a license as a builder should be responsibility and character ,experience as a builder for others, training and general knowledge, reading of plans, etc. The designation "contractor" or "builder" would then mean something. It would mark a man as experienced and able, a real builder and give tone to the profession, by an exclusion of the unreliable, the ignorant and the unworthy!

The cure for illness number two, that the compensation of the contractor is too small, is very plain. Simply charge more for your services. Being in a business in which you have every reason to take great pride, do not hold yourself too cheaply. When you figure work, do not forget the personal service you render. You have, by virtue of constant practice and much experience, become an expert in your line and your compensation should be fixed accordingly. Remember, by virtue of your investment, the equipment you own and your working capital, you are entitled to a margin of profit. Over and above that, you are entitled to a salary commensurate with your experience and ability. If you have made of yourself an expert, if you have devised systems of doing work more cheaply than others, you, and not the owner, are entitled to profit by your ingenuity. Why work up an organization better and more efficient than the other fellow and then take work so much below his price that the owner alone benefits by your ability? Make it earn dividends for yourself. Make it earn for you a good annual salary, independent of the return on your investment.

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Recognition for Mr. Dawson

The many California friends of Mr. Noble E. Dawson will be interested in learning that he has been called to assist in the concrete shipbuilding programme.

Mr. Dawson was for a number of years in San Francisco and of late has been engineer for the American System of Reinforcing of California with headquarters in Los Angeles. His work has been designing reinforcement for concrete structures and in this he has made for himself an enviable reputation. The Concrete Ship Division of the Emergency Fleet Corporation sent him an urgent telegram requesting that he come to Philadelphia for a period of two months to assist in rounding out the final design for the Standard Concrete Ship and he has patriotically responded to the call.

While enroute for the East, Mr. Dawson spent one day in San Francisco renewing old acquaintances.

Death of L. Haws

Mr. L. Haws, whose name is known in practically every city and town on the Pacific Coast because of its appearance on so many sanitary drinking fountains which are in use in our schools and public buildings and parks, is dead. Mr. Haws passed away at his home in South Berkeley early in November, following three days of illness, of Spanish influenza. Mr. Haws was 48 years old. He was the inventor of the Haws sanitary drinking fountain, and it was due to his aggressiveness and indefatigable labors that the device has become so generally used throughout the coast. Mr. Haws was well liked by the wholesale and jobbing trade and his acquaintance with the architects extended from San Diego to Seattle. His death is deeply mourned by a wide circle of friends and business acquaintances.

More Housing

A housing project, which will involve the expenditure of half a million dollars additional to the $350,000 already allotted by the Government to the G. M. Standifer Construction Corporation, Portland, is now being developed, according to *Over The Top*.

An apartment house with 300 apartments and 100 additional homes are planned. The apartment house will be three stories high and will provide two- and three-room apartments for workers and their families. It will occupy a ground space of 230x460 feet, and in architecture will be a modification of the Tudor Gothic style.

A feature of the apartment house will be a big lobby or amusement room for the general use of the residents.

The company plans to sell every one of its 100 or more houses to its employees at practically cost, and upon an easy payment plan.

Steel Iron Pipe

Iron pipe is so scarce and valuable these days that marauders have been tempted to dig it out of the ground and sell it for junk. At San Diego the police have recovered about $10,000 worth of 2-inch and 4-inch iron pipe stolen from a 40-acre olive ranch at Point Loma, owned by Mr. Wilson Chamberlain. A force of men with teams worked three weeks, according to reports, to dig up the pipe, without the knowledge of the owner. The material was found in a junk yard.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.
(Required by the Act of Congress, of August 24, 1912),

Of The Architect and Engineer of California, published monthly at San Francisco, California, for September, 1918.

State of California, } ss.
County of San Francisco, }

Before me, a Notary Public in and for the State and County aforesaid, personally appeared A. I. Whitney, who, having been duly sworn according to law, deposes and says that she is the sole owner of The Architect and Engineer of California, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher.....A. I. WHITNEY
627 Foxcroft Bldg., San Francisco
Editor.....FREDERICK W. JONES
627 Foxcroft Bldg., San Francisco
Managing Editor .....None
Business Manager.....A. I. WHITNEY
627 Foxcroft Bldg., San Francisco

2. That the owner is A. I. WHITNEY, Sole Owner, 627 Foxcroft Bldg., San Francisco.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

A. I. WHITNEY,
Publisher and Owner.

Sworn to and subscribed before me this 2nd day of October, 1917. SID S. PALMER,
Notary Public in and for the City and County of San Francisco, State of California.
[SEAL]
(My commission expires Dec. 31st, 1918.)

Smiles from the House Organs of America's Shipbuilding Plants

Figures Don't Lie

An Irishman working for a Dutchman asked for an increase in pay.

The Dutchman replied: "If you are worth it, I would be pleased to give it to you. Now, let us see what you do in a year, Pat.

We have 365 days in a year, you sleep 8 hours every day, which makes 122 days you sleep, taken from 365 days, leaves 243. Now you have 8 hours recreation every day, which makes 122 days, taken from 243 days, leaves 121 days.

"We have 52 Sundays in a year, which you have off, leaving you 69 days. You have 14 days' vacation, take this off and you have 55 days left. You don't work Saturday afternoons, this makes 26 days in a year. Take this off and you have 29 days left. Now, Pat, you allow 1½ hours for meals, which totals in a year 28 days. Take this off and you have 1 day left. I always give you St. Patrick's Day off, so I ask you, Pat, if you are entitled to a raise?"

Pat then answered: "Well, what the hell have I been doing then?"

* * *

Better Late Than Never

The speaker at an insurance banquet had finished without contributing to the gaiety or interest of the occasion, when the toastmaster said: "The speaker who has just spoken requested me in introducing him to apologize for his unpreparedness, which I omitted to do. In justice to him, I do so now."

* * *

Nothing on Him

"You know," said the lady whose motor car had run down a man, "you must have been walking very carelessly. I am a very careful driver. I have been driving a car for seven years."

"Lady, you've got nothing on me. I've been walking for fifty-four years."

* * *

Good Night!

The meanest cuss in the United States has been located. He has trained a mouse to sleep in the pants pockets in which he keeps his money. And, of course, he is a married man.

—The Bethlehem Booster, Bethlehem Steel Co.

It is good to know that the Serbians have "passed the Krnyovo-Strigovo-Drogojel-Poleshko line." If they can get by that, nothing can stop them.

* * *

Mrs. Dick—I wonder how soldiers in the trenches manage to get their clothes dry when they wash them.

Mrs. Stick (cheerfully)—I suppose they hang them on their firing line.

* * *

An old saying: Strike while the iron is hot.

A new saying: Don't strike while the Nation is hot.

—Moore Shipbuilding Co. News, Oakland.

The Power of the Will

One ship drives East, another West,
By the selfsame winds that blow;
'Tis the set of the sails and not the gales
That determines the way to go.

Like the winds of the sea are the ways of fate,
As we voyage along through life;
'Tis the Will of the Soul which decides the goal
And not the calm or strife.

—Anon. in Speed-Up, Newark Bay Shipyard.

Old Wines

STORE THEM AWAY FOR THE FUTURE
THEY IMPROVE WITH AGE.

Golberg, Bowen & Co.

WINE MERCHANTS 242 SUTTER STREET

Facts from the Field—

This Plant of the Famous "Simmons Metal Beds"—Painted With PABCOAT—The Stone Veneer

One of the unique industries of the Pacific Coast is the Simmons Manufacturing Co., the world's largest manufacturers of metal beds and springs. The wonderful growth of the business made it necessary last year to enlarge, until the big S. F. plant now covers completely three blocks.

More than four years ago the Simmons Co. painted their factory buildings with PABCOAT. After years of service, and having more than made good its many advantages, it was only natural that the new buildings were painted with PABCOAT.

PABCOAT is the ideal preservative coating for industrial buildings of all kinds. It adheres to practically all surfaces and will not crack, blister or peel. When used on the interior of a building it secures the base rate of insurance—because of its fire-retarding qualities.

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Books For Soldiers

One of the results of the campaign of the American Library Association for gift-books last spring was an influx of reading material of the type which careful mothers take pains to remove from the environment of sixteen-year-old daughters.

That the gift-horse had to be inspected carefully was demonstrated a number of times. To one camp library came copies of Zola's "L'Assommoir," Daudet's "Sapho," and De Maupassant's "Bel-Ami."

From the reading-room in a church were sent copies of Snappy Stories.

An offer of a file of the Undertaker's Review was graciously rejected.

School readers antedating the Civil War were received. One of the prizes was a telegraphic code-book of the Argentine Republic.—*Heave Together, Northwest Steel Company.*

Force of Habit

An American soldier from Portland who had been in the "zone of advance" for about six months in an engineer corps, on writing back to a chum of his, quoted the following: "When I get back to Portland, and take a stroll down Washington Street, if I hear a tire blow out, I most likely will grab for the hand-bag of the nearest lady, and dive for the handiest open cellar door, slipping the hand-bag over my head during the dive (for gas mask), and the deeper the cellar is, and the harder I light, the better I will like it."

So much for the force of habit.—*Heave Together.*

Overheard in the Employment Bureau:

Clerk:—"In case of accident, whom do you wish us to notify?"

Applicant (eagerly):—"The doctor."

* * *

When Pershing cries "More ships!" let's answer "Here they are!"

* * *

"Never despair. Somewhere beyond the clouds the sun is shining."

"Yes, and somewhere below the sea there's a solid bottom. But that doesn't help a man when he falls overboard."

—*The Chester Compass.*

The Hun—July, 1915

"The Hun came braggin'
And bullyraggin'
A fire-eatin' dragon.
The Hun, Hun, Hun.

October, 1918

His hore's now flaggin'
And his knees are baggin'
And his seat is draggin'
And he's darn near done."

—*Going Some, Portland, Ore.*

On the Ways

Kennedy has forty men working for him. He is a big, burly fellow, proud of his muscular powers. "I want it understood," he said, with the glare of a lion, "that I kin lick any man on the job."

Another athletic-looking Irishman drooped his acetylene torch and said, 'What's that? Ye think ye can lick any one av us?"

"Shure," replied Kennedy, with assurance, "I kin lick any man that works under me."

"Well, ye can't lick me," said the other, as he threw down his pick and spat on his hands.

"All right," said Kennedy, "go to the timekeeper and get your pay. I won't have any man under me that I can't lick."

* * *

And Long Ones

Lady of House—You say you work? At what?

Hobo—At intervals.

—*Speed-Up*

* * *

Jack—Hey, Wolfe!

Wolfe—Ha-a-a-a-h-h-h What do' youh want?

Jack—What is a board foot?

Wolfe—Y' got me, it must be sumpin' like a wooden leg!

—*Force an 'Aft, Newburg, N. Y. Shipyards.*

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West Coast Delivers First Million Tons

Figures compiled by the Shipping Board show that up to and including the first two weeks of September the Pacific Coast shipyards delivered their first million tons of completed new vessels. The Pacific Coast yards lead those of the Atlantic Coast by 376,300 deadweight tons and those of the Great Lakes by 611,305 deadweight tons. The Pacific Coast yards have delivered about one-half of all the new tonnage.

Here are the deliveries of completed ships up to and including September 14, from the four principal shipbuilding sections building for the Shipping Board:

Pacific Coast, 137 vessels of 1,011,160 deadweight tons.

Atlantic Coast, 87 vessels of 634,860 deadweight tons.

Great Lakes, 131 vessels of 399,855 deadweight tons.

Gulf Coast, 1 vessel of 3,500 deadweight tons.

Totals, 356 vessels of 2,045,875 deadweight tons.

The Pacific Coast also leads in vessels launched, but not yet completed and delivered. More than half a million deadweight tons of new ships are off the ways of the Pacific Coast shipyards approaching completion. The vessels launched, but not yet delivered, in the four principal shipbuilding sections:

Pacific Coast, 134 vessels of 610,900 deadweight tons.

Atlantic Coast, 69 vessels of 392,816 deadweight tons.

Great Lakes, 33 vessels of 117,050 deadweight tons.

Gulf Coast, 28 vessels of 102,800 deadweight tons.

Totals, 264 vessels of 1,223,566 deadweight tons.

Industrial Organizations Fighting "Flu"

Foremost among the industries in guarding against the "Flu" is the S. F. Bowser & Company, oil tank and pump works at Fort Wayne, Ind. The officials have organized a health campaign for the benefit of all employees, as well as for the benefit of the city itself. Stations have been installed about the plant buildings which are easily accessible to all, and every employee of the big works is requested and expected to have his or her nose and throat sprayed at least daily.

Specially instructed attendants for the spraying are on hand at all times, the service is absolutely free, the company paying the entire expense. Special bulletins have also been posted instructing the men and women on the care of the nose and throat. The influenza germs are in the air in the form of dust and naturally attack through these organs, therefore, every precaution possible should be taken. Spraying of the nose and throat is one of the greatest preventives.

As a further precaution employees have been sworn in as deputy health commissioners with full power to enforce all rules and laws of the health department. It is their duty to take action (drastic if necessary) to prevent the spread of the disease through spitting, coughing or sneezing and to report all cases to the deputies, however slight.

Employees of the factory and office have been instructed to report all cases to the deputies. Any employee showing the slightest symptoms will be sent home immediately. The employees are all responding with a will to the treatments, realizing that everything is being done to insure their health and keep them at their different tasks which are so essential to the maintenance of the war.

All spittons of any kind have been removed, as one of the common mediums of transmitting the germs of influenza is through spitting. All employees are also requested to refrain from spitting on the premises.

The Bowser scheme of precaution is a forerunner of similar campaigns which are being inaugurated among the larger plants. Officials of the General Electric Works are devising plans along similar lines.

Rapid Construction

Here's a story of rapidity in construction that probably beats all records. It is of a war department hospital at Staten Island, New York. The building is a one-story frame structure, with all conveniences. It was built in just ten hours and twenty-eight minutes from the time the work started at 7 o'clock in the morning. The hospital is 150 feet long, and 24 feet wide, with a porch 10½ feet deep, extending the entire length of the building on one side. Not a posthole had been dug and not a piece of timber had been cut to size when the work began. At 7 o'clock 130 laborers began to dig postholes. Before 8 o'clock 434 carpenters, plumbers and electricians were at work, and by noon the roof was on. At 3:30 the electricians, plumbers, sheet metal workers and pipe coverers had finished. An hour later only 88 carpenters were left on the job and at 5:28 the entire task was completed. The building was wired, with lights ready to be switched on, and water was running in the pipes. Radiators had been installed and connected and fire extinguishers were hanging on the walls.—Improvement Bulletin.

University Barracks

Barracks for the aviation school at Berkeley recently have been completed in record time by Messrs. Parker and Wagner, from plans by Messrs. Bakewell & Brown. The regents have expended more than $250,000 on the temporary buildings.

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"Volunteer Plan" a Success at the Bowser Pump Works

The Fourth Liberty Loan Campaign at the Bowser plant was conducted strictly according to a "Volunteer Plan." The Allen County Indiana Organization put on a "Voluntary Campaign" and the factories were asked to join in the spirit of the undertaking.

In previous campaigns the management organized a soliciting squad, which enlisted the services of practically 175 workers. The head of each department was designated as captain and he would appoint as many lieutenants as necessary to get the subscription in this department.

This "Volunteer" campaign made it unnecessary for all of these workers to solicit subscriptions. Everyone was urged to buy as many bonds as they could possibly afford, without being personally called upon to do so.

In consequence of the request, the old Bowser team organization which had operated in the past was not in existence. Three booths were set up in the plant where subscriptions were received. There was no soliciting—there was no urging—but every man and woman was permitted to work out the problem with his or her own conscience, and be the sole judge.

When the "Voluntary" campaign closed Tuesday night, October 1st, the results were counted up and it was found that the conscience of the Bowser employees had been seriously at work, without a single prompting from the old time team organization. The employees had subscribed of their own free-will a larger amount, number of people considered, than was subscribed for the Third Liberty Loan. This fact attests to the soundness of the Voluntary Subscription Plan of a "Conscience Campaign" and at the same time speaks well for the state of health of the Bowser conscience.

Fourteen hundred and ninety-five subscriptions were contributed to the Fourth Liberty Loan. No branch office nor salesmen's subscriptions were included in this. The firm deemed it advisable for branch office employees and salesmen to subscribe locally. The contributions were therefore solely from the home office and factory forces.

Engineers Wanted for Construction Division of Army

The United States Civil Service Commission will hold open competitive examinations for the following positions: Chief of survey party, $2700-$3000; transit man, $2400; levelman, $2100; rodman, $1,800; chairman, $1800; one topographic draftsman, $2100. The last position is open to women. It is expected that the following appointment will be made from these examinations: 50 chiefs of survey party, 50 transitmen, 25 levelmen, 125 rodmen, 150 chainmen, for duty in the field; and 50 draftsmen for duty in the field and in Washington, D. C. Competitors will not be required to report for examination at any place, but will be rated upon the sworn statements in their applications and upon corroborative evidence adduced by the Commission. The duties of chief of survey party will be to take charge of and supervise survey parties engaged on field surveys, in connection with the layout of camps, sewer systems, railroad yards, docks, wharves, etc. Application blanks (Form 1312) can be obtained from the United States Civil Service Commission, Washington, D. C., or from the United States Civil Service Boards in the larger cities.

Government is Saving

The building materials section of the War Industries Board will effect a saving of 40,000 tons of pig iron, the equivalent of about 80,000 tons of steel, through new regulations governing the use of cast-iron pipes, tanks, and accessories to be placed in Government projects under way and under consideration, according to a statement authorized by B. M. Baruch, chairman of the War Industries Board.

The regulations and conditions will be enforced by the government, even though they may conflict with municipal ordinance, codes, or local building regulations in the communities where the government is building. The only departure authorized is where the size or type of the structure make changes necessary, in which case special application shall be made to and the approval secured of the building materials section. The regulations will not preclude the use of existing manufactured stocks, provided the metal can not be utilized for more essential war purposes.

Nothing larger than 4-inch diameter nor heavier than standard plain cast-iron soil pipe is to be used for vertical stacks above ground; the full size stack to be carried through the roof. Portland cement concrete or vitrified clay pipe shall be used for horizontal lines under ground.

No metal pipe shall be used for water mains without special permission of the War Industries Board. This does not apply to pipe lines carrying pressures of more than 100 pounds.

All water-supply tanks shall be of other material than metal.

Culvert pipes shall be reinforced concrete, burned clay, or other material than metal.

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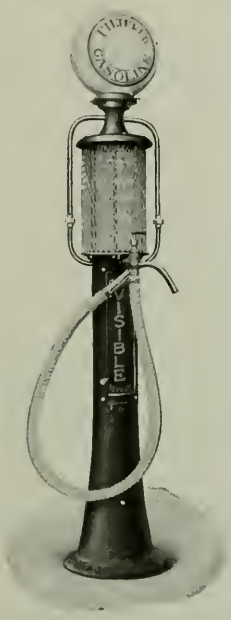
Open Air Window Ventilation

Notice has been served on the New York City Department of Education by the New York City Department of Health which amounts, practically, to an order to show cause why the present practice of ventilating public school buildings by mechanical means should not be abandoned in favor of the open window method. Thus is resurrected an old-time controversy between the natural and mechanical ventilation advocates, but this time the agitation is more than academic; it has teeth in it. It means, if put through, that hundreds of thousands of school children are to live, during their school terms, under conditions that were familiar enough to those of a generation ago. It means that such an example on the part of a large city like New York could not fail to have a powerful if not a decisive, influence on the attitude of similar authorities in other cities. Finally, it means one of the most destructive blows to modern ventilating practice that the heating and ventilating trade and profession have ever been called upon to meet.

Back of the immediate developments that have brought about this condition must be mentioned the apathy on the part of the profession in meeting the claims of the open-window advocates with more than negative arguments. This stand has only served to widen the breach that separates the two schools of thought on this subject. What is needed is some basis of bringing the two opposing camps closer together and this, we believe, is being furnished at the present time by the Chicago Commission on Ventilation, which has shown that the conditions to be secured are the important thing, rather than the means of securing them.

It is claimed by some that air tests are not within the province of the ventilating engineer, that it is for the physiologist to find the conditions that must be met and that the engineer's work is accomplished when he designs apparatus to meet those conditions. The whole point, however, is whether his apparatus does meet the conditions for which it is designed. It is notoriously true that, as ordinarily operated, it does not. Here is the real problem confronting the heating engineer; how to provide that his carefully-designed scheme in which, we will say, he has fully met the conditions of temperature, humidity, air motion and the rest of it, is not allowed to be neglected and made worse than useless by improper operation.

We dare say that if the mechanical equipments of school buildings could be operated by their designers we would soon cease to hear the cry that present-day ventilating practice is on the wrong track. In the meantime one might almost wish that the health board would have its way in



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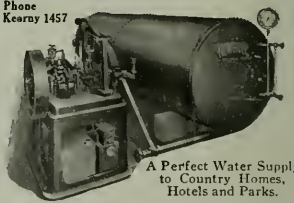

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this matter just to see the reaction that would inevitably follow the adoption of open window ventilation in a climate like that of New York.—*Heating and Ventilating Magazine.*

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Sand and Gravel Company Sues Contractors of Twin Peaks Tunnel

The Niles Sand, Gravel and Rock Company, whose general offices are in the Mutual Savings Bank building, San Francisco, is suing R. C. Storrie & Co., contractors of the Twin Peaks tunnel, claiming a balance due of $15,195 for concrete gravel, crushed gravel and sand alleged to have been delivered to the contractors at different periods from December, 1914, to July 21, 1917. The Niles company's contract with the Storrie company is said to have been for $103,116 and of this amount it is admitted that $87,920 was paid on account.

The total amount of material delivered, according to the plaintiff, was 137,488.22 tons. The defendants have answered the complaint by raising a number of technical points which the court will be asked to pass upon when the case comes up for trial December 18. The defendants claim that the contract called for delivery of sand and gravel to weigh not exceeding 2400 lbs. per cubic yard and to be paid for at the rate of 75 cents per ton of 2000 lbs. It is further claimed by them that the materials furnished weighed nearer 3000 lbs. per cubic yard and that full payment of the claim has therefore been made.

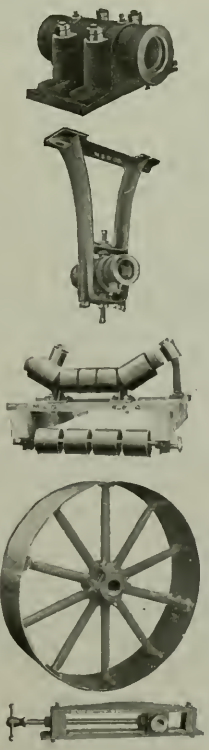
Messrs. John L. McNab and Byron Coleman are attorneys for the plaintiff and Mr. R. H. Countryman is attorney for the defendants.

Five Million Dollar Floating Dock

A floating drydock of 12,000 tons capacity is one of the items of port improvement planned by the Public Dock Commission of Portland, Oregon and to be installed with the proceeds of a $5,000,000 bond issue. According to the Commission, present drydocking facilities of the port are inadequate.

Alterations and Additions

Mr. Nathaniel Blaisdell, architect at 255 California Street, San Francisco, has recently completed plans for alterations and additions to the Balfour-Guthrie building, at Sansome and California Streets, San Francisco.



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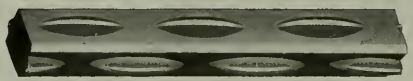

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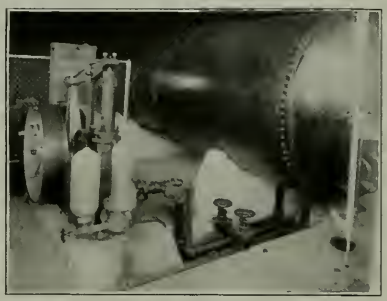

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Twisted Bars. Sold by Woods, Huddart & Gunn, 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., Underwood Bldg., San Francisco.

CONCRETE SURFACING

"Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL

K. E. Parker, 251 Kearny St., San Francisco.
Barrett & Hilp, Sharon Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Houghton Construction Co., Flatiron Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.

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and J. D. Martin Scenic Co. 400 PANTAGES BLDG., SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GENERAL CONTRACTORS (Continued)

Monson Bros., 1907 Bryant St., San Francisco.
Grace & Bernieri, Claus Spreckels Bldg., San Francisco.
Geo. W. Boxton & Son, Hearst Bldg., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
Knowles & Mathewson, Call Bldg., San Francisco.
C. L. Wold Co., 75 Sutter St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.

CONVEYING MACHINERY

Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.

CORK TILING, FLOORING, ETC.

Be-ver Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK

California Building Material Company, new Call Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Bank Bldg., San Francisco.

DAMP-PROOFING COMPOUND

Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Mauerene," sold by Imperial Co., Monadnock Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Paint Co., 34 First St., San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.

DRINKING FOUNTAINS

Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Engineering Co., 530 Folsom St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Geo. A. Sittman, 21 Beale St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRICAL ENGINEERS

Chas. T. Phillips, Pacific Bldg., San Francisco.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS

Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.

ENGINEERS

Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

FANS AND BLOWERS

John Ringius, 252 Townsend St., San Francisco.

FENCES—WIRE

Pacific Fence Construction Co., 245 Market St., San Francisco.

FIRE ESCAPES

Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE EXTINGUISHERS

Scott Company, 243 Minna St., San Francisco
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.

FIREPROOFING AND PARTITIONS

Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

FIRE RETARDING PAINT

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.

FLOORS—HARDWOOD
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit, Bowser & Co., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GLASS
W. P. Fuller & Company, all principal Coast cities.
Fuller & Goepp, 34 Davis St., San Francisco.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent, Crossley Building, San Francisco.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.
McGilvray Raymond Granite Company, 634-666 Townsend St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Pacific Improvement Co., Crocker Bldg., San Francisco.
Niles Sand, Gravel & Rock Co., Mutual Savings Bank Bldg., 704 Market St., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.

HEATING AND VENTILATING
Gilley-Schmid Company, 198 Otis St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Charles T. Phillips, Pacific Bldg., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 507 Montgomery St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

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Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Denison Hollow Interlocking Blocks. Cannon-Phillips Co., Forum Bldg., Sacramento, and the Howard Company, Oakland.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE
Plant Rubber and Asbestos Works, 537-539 Brannan St., San Francisco.

HOSPITAL FIXTURES
J. L. Mott Iron Works, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE
J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., Underwood Bldg., San Francisco.

LATHING MATERIAL (Continued)
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Holloway Expanded Metal Company, 517-39 Second St., San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg. Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
Paraffine Companies, factory in Oakland; office, First St., near Market, San Francisco.

LUMBER
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
California Redwood Association, 216 Pine St., San Francisco.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

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American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

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METAL LATH
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Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS

American Standard Oil Burner Company, Seventh and Cedar Sts., Oakland.
S. T. Johnson Co., 1337 Mission St., San Francisco.
T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.

ORNAMENTAL IRON AND BRONZE

California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Sartorius Company, Inc., 15th and Utah Sts., San Francisco.
West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

PACKING

Plant, Rubber & Asbestos Works, San Francisco.

PAINT FOR CEMENT

Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.

Paraffine Companies, 34 First St., San Francisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.

PAINTING, TINTING, ETC.

I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.

PAINTING, TINTING, ETC. (Continued)

The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.

The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
Magner Bros., 414-424 Ninth St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER

White Bros., Fifth and Brannan Sts., San Francisco.

PAVING BRICK

California Brick Company, Niles, Cal.

PIPE—VITRIFIED SALT GLAZED TERRA COTTA

Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS

Plant Rubber and Asbestos Works, 537-539 Brannan St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY

U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS

MacGruer & Co., 180 Jessie St., San Francisco.

PLUMBING CONTRACTORS

Alex Coleman, 706 Ellis St., San Francisco.
Carl Doell, Twenty-second St., Oakland.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.

California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
Clow, plumbing, Rialto Bldg., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

PLUMBING FIXTURES, MATERIALS, ETC. (Continued)

Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
Standard Sanitary Mfg. Co., 149 Bluxome St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POTTERY

Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

POWER TRANSMITTING MACHINERY

Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.

PUMPS

Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.
Woodin & Little, 33-41 Fremont St., San Francisco.

REVERSIBLE WINDOWS

Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.

C. F. Weber & Co., 985 Market St., S. F.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., Underwood Bldg., San Francisco.
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS

Bender Roofing Company, Monadnock Bldg., San Francisco.
Niles Sand, Gravel and Rock Co., Mutual Bank Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Vulcanite Products—Vulcanite ornamental roofings and Vulcanite roofing shingles, sold by Patent Vulcanite Roofing Co., 16th and Texas Sts., San Francisco.

SAFETY TREADS

Pacific Building Materials Co., Underwood Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.

The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES

C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING

Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

SHEET METAL WORK, SKYLIGHTS, ETC.

San Francisco Metal Stamping Works, 2269 Folsom St., San Francisco.

SHINGLE STAINS

Cabot's Creosote Stains, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.

STEEL HEATING BOILERS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.

Ocean Shore Iron Works, 558 Eighth St., San Francisco.

STEEL AND IRON—STRUCTURAL

Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Southern California Iron and Steel Co., Fourth and Mateo Sts., Los Angeles.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES

W. P. Fuller Co., all principal Coast cities.
The Paraffine Companies, Inc., 34 First St., San Francisco.

STEEL REINFORCING

Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles; W. B. Kyle, San Francisco representative, Call Bldg.
Woods, Huddart & Gunn, 444 Market St., San Francisco.

STEEL ROLLING DOORS

Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.

STEEL SASH

"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
Springfield steel sash, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.

STEEL WHEELBARROWS

Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

STONE

California Granite Co., Gen. Contractors' Ass'n, San Francisco.
McGilvray Stone Company, 634 Townsend St., San Francisco.
Raymond Granite Company, 1 and 3 Potrero St., San Francisco.

STORAGE SYSTEMS—GASOLINE, OIL, ETC.

S. F. Bowser & Co., 612 Howard St., San Francisco.

STORE FRONTS

Fuller & Goepp, 34 Davis St., San Francisco.

SUMP AND BILGE PUMPS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES

Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

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Bittmann & Battee, 84 Second St., San Francisco.

THEATER AND OPERA CHAIRS
C. F. Weber & Co., 365 Market St., San Francisco.

TILES, MOSAICS, MANTELS, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

TILE FOR FLOORING
Holloway Expanded Metal Company, 517-539 Second St., San Francisco.

TILE FOR ROOFING
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Denison Hollow Interlocking Blocks, Forum Bldg., Sacramento.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

VACUUM CLEANERS
United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

VALVES
W. E. Mushet Co., 502 Mission St., San Francisco.
Geo. H. Tay Company, Mission St., cor. Second, San Francisco; Tenth and Harrison Sts., Oakland.
Crane Radiator Valves., manufactured by Crane Co, Second and Brannan Sts., San Francisco.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
Standard Varnish Works, 55 Stevenson St.,San Francisco.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

VENTILATOR COWLES
San Francisco Metal Stamping Works, 2269 Folsom St., San Francisco.

VITREOUS CHINAWARE
Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

WALL BEDS, SEATS, ETC.
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwnd" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

WALL PAPER AND DRAPERIES
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 681 Geary St., San Francisco.
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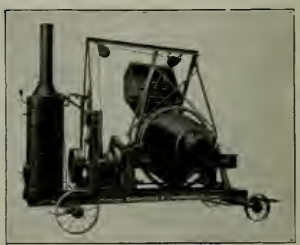

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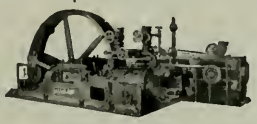

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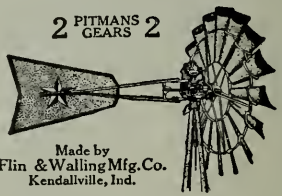

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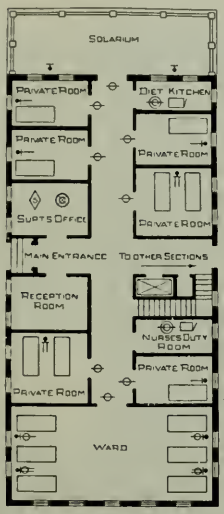

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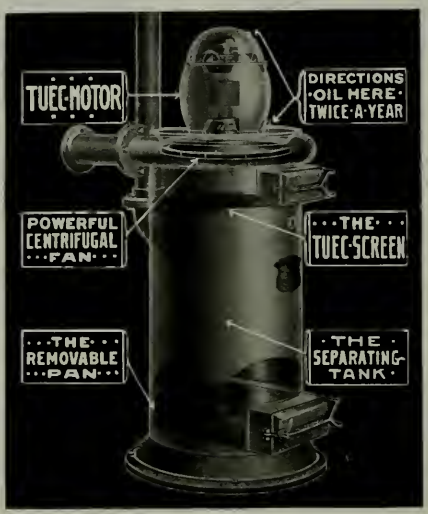

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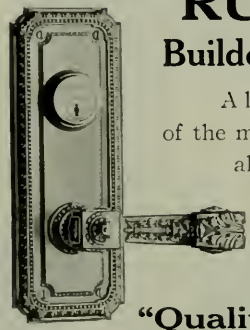

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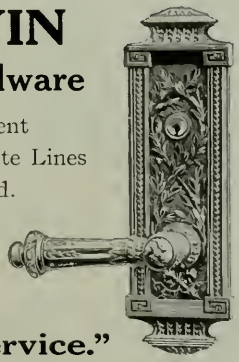

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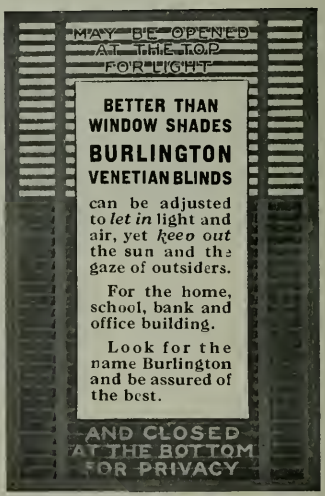
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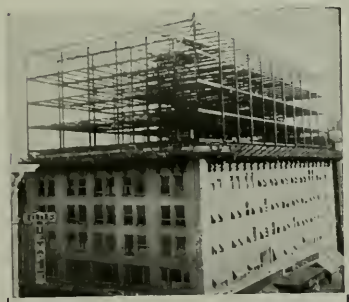

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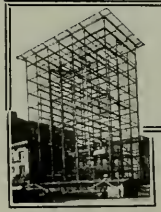

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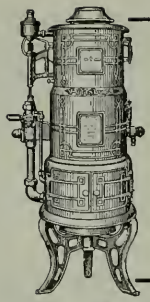

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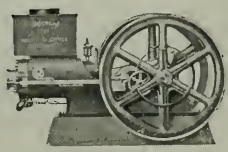

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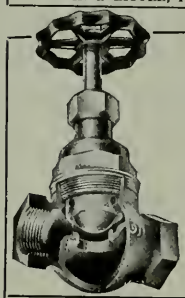

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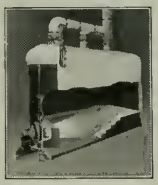

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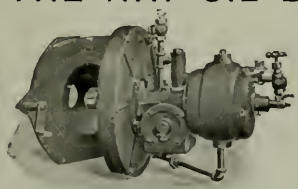

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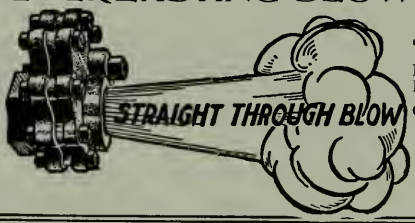

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The Architect and Engineer

Volume LV. OF CALIFORNIA Number 3.

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OPEN-AIR THEATRE AT LAZIENSKI GARDENS, WARSAW, POLAND

A suggested type of War Memorial which offers the greatest opportunity for fitting embellishment and civic usefulness.

THE
ARCHITECT
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ENGINEER
OF CALIFORNIA

DECEMBER, 1918 Vol. LV. No. 3.

The War Memorial — Shall We Make It Something Worth While?

By CHARLES H. CHENEY

LIBERTY TEMPLE, PORTLAND, ORE.

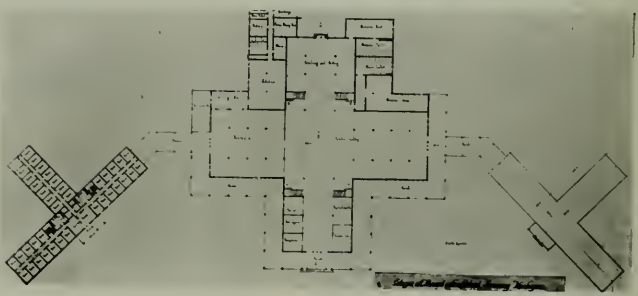
A GREAT problem confronts every community of the country. Architects, sculptors, landscape architects, city planners are being called in by civic committees; money is being subscribed with a lavish hand that the nation's dead and wounded may be honored and the great victory of humanity fittingly commemorated.

The form that these monuments shall take is now everywhere being discussed and it seems our duty to keep clearly before these committees and the public an understanding of the fact that these monuments may be made as perpetual a living force and value to future generations, as the great principles which led us to victory.

There seems to be a general demand that the large sums to be expended shall go into something that will be useful to the community, rather than into the dead monuments of granite and bronze, such as cluttered the country after the civil war, and not only meant little after that generation was gone, but were often of such poor inspirational or artistic appeal as to become an incubus to the community possessing them.

THE COMMUNITY HOUSE AT MANHATTAN, KANSAS

It was built jointly by the city, the Rotary Club and War Camp Community Service. It will serve as a W. C. C. S. center for entertainment of soldiers until the army is demobilized; then it will become a social and recreational center for the people of Manhattan.



PLAN OF THE COMMUNITY HOUSE AT CAMP CUSTER

This is typical of the tendency to throw together as many of the rooms as possible, so that the entire building will have the character of a gigantic living-room and meeting-place.

COMMUNITY HOUSE, CAMP SHERMAN, CHILLICOTHE, OHIO

Liberty buildings, community centers, victory boulevards, memorial highways, commemorative hospitals and similar constructively useful undertakings are suggested as more appropriate substitutes by foremost citizens, newspapers, and interested organizations from Cleveland to San Francisco and from Portland to Atlanta.

Will the architects, and sculptors particularly, of this country realize their highest civic duty, and help their respective communities to make the best use of these funds so sincerely contributed? We believe they will not only do that but will also take the lead in so directing public attention.

* * *

In practically every comprehensive city planning project in this country the civic center has been a feature. This in a sense gave a physical center to the city's aspirations for civic betterment of all sorts. Here in one group would be found the city hall, the postoffice, the public library and in some larger cities an auditorium and art gallery. But very seldom have these civic centers been made to function also as true community centers—that is, as places to which the people would come for dances, semi-public meetings, etc., and places where the civic agencies such as the Betterment Commissions, the local Red Cross, etc., could have their headquarters. In the possibility of bringing this phase of community life to the civic center there is a new chance for city planning to prove its usefulness.

When the war started many people thought that such projects would be lost sight of until peace came. On the contrary a great impetus has been given to many such movements in unexpected ways. The Community House idea, particularly, has gained greatly through the activities of War Camp Community Service. This organization was created to provide wholesome recreation and comfort for soldiers and sailors in towns adjacent to the army cantonments and army and navy posts. It has organizers and representatives in more than three hundred cities, and has stimulated entertainment work for men in uniform in more than six hundred cities.

The War Camp Community Service has acted as the leaven in arousing civilian responsibility to meet the emergency created by the proximity of the camps. It has brought into each camp community trained social workers who enlist the interest and active co-operation of the townspeople. The local organization usually brings together representatives from the Rotary Club, the Chamber of Commerce, the most active churches in the city, the leading woman's club, and any other body which seems especially fitted to co-operate. This organization in turn appoints committees made up of men or women, or both, to mobilize every facility the community affords for the comfort, pleasure or welfare of soldier and sailor guests. One of its first tasks is to secure the opening of at least one soldiers' and sailors' club, where men in uniform can lounge, read or write, play games, obtain soft drinks, dancing, bathing and shaving facilities, etc.

It is not a far step from such a club, which is really a center for social and recreational life of soldiers and their friends, to the similar social and recreational center for all of the people in the community. Some of these clubs have indeed turned out to be in fact community centers. When the camp is at a distance from the nearest city these clubs may be like the Community House at Camp Sherman, Chillicothe, Ohio. This has an immense central lounging room, while in one wing is a restaurant and in another wing a theatre with auditorium and stage. There are also the usual administrative offices, cigar stand, news stand, kitchens, etc. To this center come most of the relatives and friends who wish to meet soldiers in the

camp. Incidentally, it may be added that a number of dormitory buildings adjoin the main Community House. The rooms in these are rented to visiting friends of the men in camp who desire to stay more than a single day.

A Community House which is more typical of what will doubtless come after the war is that at Manhattan, Kansas. Here a brick building was erected through the joint efforts of War Camp Community Service, the district Rotary Clubs, which contributed $16,000 to building and furnishings, and the city, which, though only 7,500 in population, bonded itself for fifteen or twenty thousand dollars to complete the necessary funds. This building will be used primarily as a soldiers' club during the balance of the war period and will be run by the War Camp Community Service organization. When peace comes, it will revert to the city of Manhattan and will be used exclusively as a community center. Already a great many community social functions and semi-public meetings are being held there. It has been called appropriately "Club House of Democracy." It is, indeed, a common meeting-place for all the residents of the city.

As a type of memorial peculiarly valuable to a city, though built before the war, the Community House at La Jolla, near San Diego, California, might well be duplicated with profit in many places. Erected at a cost of $42,000 in the Spanish Renaissance style typical of Southern California, this building contains a little theatre seating 350 people for meetings, with a stage suitable for real dramatic productions, among which were recently included "The Doll's House" and similar plays. There are also facilities for almost every activity of the community, including library, reading rooms, billiard rooms, showers and lockers for both men and women, kitchen and dining room, club rooms, dressing rooms and first aid rooms. Adjoining the building is a completely equipped playground, which cost $32,000 equipped, containing an outdoor gymnasium for boys and one for girls, slides, swings, wading pool, ball courts, baseball diamond, tennis courts, etc., the latter of which are used for dancing two nights a week with an average attendance during war times of 500 couples.

War Camp Community Service has stimulated several other communities to start building similar centers, and the idea is spreading throughout the country. In any case, it is certain that scores, if not hundreds, of such buildings will be erected in the years immediately following the war. It seems, indeed, that hereafter no city planning scheme will be complete without provision for such a social center.

The proposed perpetuation in enduring form of the Liberty Temple in Portland, Oregon, and of similar buildings, seems possibly more appropriate than any other of the memorial suggestions offered. The Liberty Loan organizations in every city of the country have perfected such marvelously successful working committees, the women's committees for War Savings Stamps drives and the other groups working for community camp service, etc., have built up something that is infinitely precious, something we cannot afford to allow to become disorganized and which is now just as necessary for the successful development of the home community in peace times.

What could be more useful, more permanently valuable and at the same time more appropriately commemorative of our war sacrifices and efforts, both at home and abroad, than the building of such a permanent Liberty Temple, not only in Portland, but in other large cities? Built in enduring materials, enriched in decoration and design, with a few conveniences added, it could, at no great cost, be a permanent downtown center for all civic drives. Its open room or auditorium could easily be made also a little

theatre for intimate plays, chamber music, community chorus work, civic committee meetings and the like.

Similar ideas seem to be in mind in other parts of the country. Mr. H. S. Buttenheim, editor of the "American City Magazine," recently made the following suggestions:

"The erection of mere monuments or statues in acknowledgment of the great debt which the American people owe the soldiers and sailors who are giving all they have for the cause of Democracy, would be an entirely inadequate tribute to a glorious sacrifice. To help the living while commemorating the dead is the purpose of the plan to build in every community, after the war, a neighborhood house to be known as a Liberty Building and to be used as a center of public service, fellowship and recreation for all the people, thus symbolizing the Democracy for which their fellow townsmen shall have fought.

"Now is the time to begin the work which will make this ideal a reality. There is money to be pledged, there are designs to be drawn and building sites to be secured, and organizations must be formed for the administration of the community buildings. The construction of the buildings can be made of help in the period of labor adjustment which will follow the war. The experience of civic and commercial bodies and war service organizations during the war will be of aid in financing and administering the buildings. The enthusiasm and patriotism of all the people can find expression in connection with the making of these new homes for Democracy."

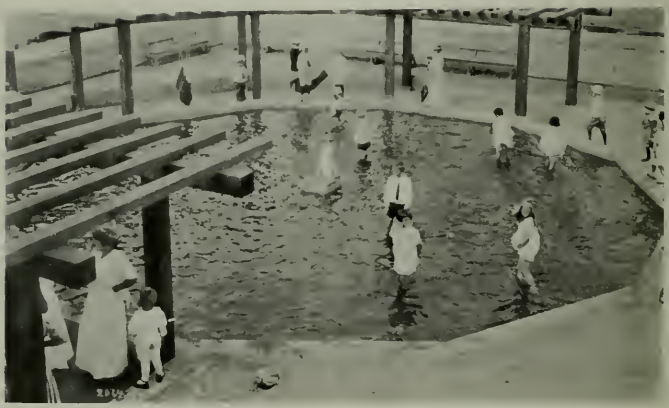
Other respected civic authorities strongly fall in with this idea, as follows:

"In my boyhood every village had its 'liberty pole' on which its flag was raised. I think those poles were set up all over this country after the Revolutionary War and were called 'liberty poles' to commemorate our independence. The name served a good purpose. The establishment of 'Liberty Buildings' as community houses throughout the country will serve a splendid social purpose, and the name is most fitting." Lawson Purdy, President, National Municipal League.

"The idea of promoting the erection all over the land of community buildings to be known by some name which will associate them with a memorial thought seems to me to be a most excellent, patriotic and timely thing now to propose. No monument, I believe, could be devised which would serve as a memorial so well, while at the same time very greatly advantaging the community spirit, the community service and the community solidarity upon which our prosecution of the great war now depends and upon which our prosecution of after-war prosperity must depend." J. Horace McFarland, President, American Civic Association.

The general adoption of this proposal would solve a problem about which some of us have worried considerably: That is, how to avoid the building of hundreds of such distressing and tenth-rate monuments as followed the Civil War. This would also provide a living memorial to each community's soldiers, which would be both dignified and useful to generations to come. This suggestion also seems to provide a method of financing the erection of Community Houses in many cities. Immense sums of money will be raised for memorials during the next few years, and it would be a blessing if this could be diverted to some constructive use.

The possibilities of such a Community House as a center of local recreational and social life, and as a focal point for all sorts of betterment projects, are unlimited. Naturally such organizations as the local Red Cross, local center of the Forum movement, the recreation and play-ground commission,



WADING POOL, LA JOLLA PLAYGROUND
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SUPERVISOR'S RESIDENCE, LA JOLLA, CALIFORNIA
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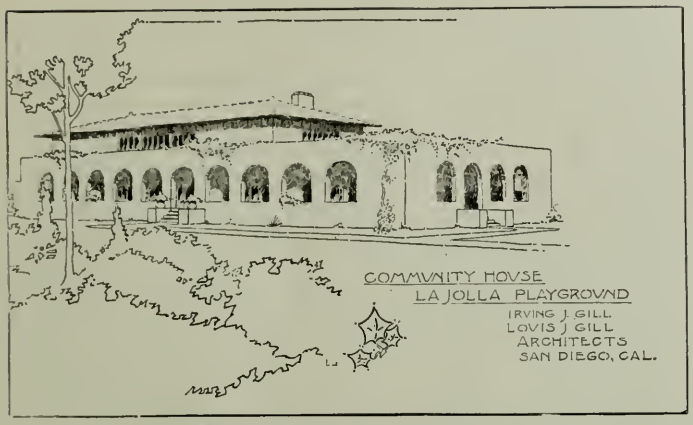

COMMUNITY HOUSE, LA JOLLA PLAYGROUND
Irving J. Gill and Louis J. Gill, Architects.

NORTH AND EAST VIEW, COMMUNITY HOUSE, LA JOLLA PLAYGROUND
Irving J. Gill and Louis J. Gill, Architects.

the charity commission and other community associations, would have their headquarters in the building. There is no reason why there should not be some special committee of well-known people to be in charge of the Community House, similar to the central committee which has charge of entertainment and recreation work for soldiers in hundreds of American cities now. At present these are organized by a representative of War Camp Community Service, and it is not impossible that after the war there will be a similar organization which will put trained workers in the field for community work instead of merely activities for men in uniform. This larger central committee could have sub-committees on community dances and similar social affairs. This work should be extended so that the Community House will be a center also for the arts. For instance, the office of the community sing leader should be here, and each Community House should contain a completely equipped theatre, (not the sort that architects have been putting into school houses all over the country, but with stages equipped under expert advice as to what the new arts of the theatre demand in the way of lighting, stage space, etc.). There should also be a gallery built into the Community House, in each city which is too small to have a separate art gallery. Perhaps some of the rooms which are used for social purposes could be so designed that their walls could be utilized for exhibition space. This would avoid the expense of separate exhibition rooms. To such galleries The American Federation of Arts, The Art Alliance and other organizations would gladly send three or four traveling exhibits each year. There is, indeed, no department of community interest, in social life or economics, recreation, or the arts, which could not profitably be centered at this one point. In other words, this Community House should be a clearing-house for the community life of the city.

Secretary Lane of the Department of the Interior has said that the returning soldiers must be brought back to the land and to the small community. It would seem that the only way to accomplish this is to make small-town life more attractive—to bring there something of the freer social life, the cultural life, the music, the art, the theatre productions and other features of the larger city. A Community House, democratically run, free from political or religious prejudices, and including a dance floor, a theatre and a gallery, would go far toward curing the old social and artistic stagnation in small American communities.

A member of the War Camp Community Service in New York City also writes us: "Let me add something about the ways in which this problem particularly affects the architect. It seems to me that the Community House, more than any other type of building, would give American architects opportunity to show their originality and their sense of fitting a building to its purpose. To me it would seem a calamity if a model Community House were designed by some Beaux Arts architect here in New York, and sent out to cities all over the country. I believe that each town should have something distinctive of its own life and traditions. Even a general adherence to monumental, classic or renaissance style would be a great mistake. I can see, in the hundreds of Community Houses to be built, the possibility of a revival of some of the finest traditions of Colonial architecture in the New England and Southern states and perhaps a fine adaption of the Spanish-American tradition in the southwest. If the public would fully realize this, we might obtain at last something approaching in the aggregate, a national American architecture."

When France Rebuilds

HAVE you Americans any conception of what the requirements of France will be, when the allies have won the war and our country begins its work of reconstruction?" This question was asked me a few days ago by a prominent business man of Paris, who, having been gassed, can no longer fight, and is visiting in this country, says H. H. Windsor in the Popular Mechanics Magazine. From what he proceeded to relate it is evident that comparatively few on this side do realize what our export trade to France is destined to become.

"For many years," he said, "our people secured their machinery, printing presses, tools, electric machinery, and lighting fixtures, etc., all from Germany. This was because German prices were lower than other countries. But now! Germany could not name a price which would induce a Frenchman to buy of her, no matter what his need. England will be busy supplying her own wants and those of her export trade, hence we are looking to your country. Our textile mills, nearly all of which were in northeast France, have long since been destroyed and the machinery carried into Germany. Our textile manufacturers are already making a new start in southwest France, securing what little machinery they can. With the end of the war this industry will be one of the first to resume, and we shall require, of textile machinery alone, over 200,000,000 francs. I could go on down a list of a hundred articles whose requirements, while not so great, will in the aggregate total a vast sum. Partly because our people regard the Americans so highly, and are full of admiration for the splendid things they are doing in our country, and partly that we may know and read your language great numbers of our people are studying English, not only to be able to read it, but to speak it as well. We expect to offer such attractive opportunities, especially to constructive engineers and mechanics of all kinds, that thousands of your young men will remain in France, at least during the first two or three years of reconstruction."

* * *

Terrazzo Floors Laid in A. D. 900

A writer by the name of Sagredo, states an exchange, in referring to building construction in Venice, tells how Venetian pavement—today referred to as terrazzo floors—was laid. In A. D. 900 the usual method was to lay down a floor of heavy planks, upon which a thick layer of mortar and small pebbles was spread out and beaten down to a hard surface; upon this again a second layer of cement mixed with pounded bricks was spread, and this was beaten with heavy wood beaters till it was perfectly hard and even. It was from this beginning that the so-called "Venetian pavement" soon developed. For rich people caused small pieces of colored marble, and even mother-of-pearl, to be set into the cement of the second layer, which was then no longer beaten, but rolled with a ponderous stone roller and then rubbed down with a smooth stone and sand and water, and at last polished to a brilliant surface. So the roller for finishing concrete pavement is not so much of an innovation after all.

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Horace G. Simpson, Architect

HOUSE FOR WALTER H. LEIMERT COMPANY, OAKLAND
Horace G. Simpson, Architect

SCHEME OF WORLD CENTRE IN NEW JERSEY, UNITED STATES AMERICA

A World's Peace Capital

By F. W. FITZPATRICK, Architect

A WORLD PEACE! Why not a World Capital?—a city which will serve as a clearing house for all that is best in human endeavor along scientific, spiritual, commercial and cultural lines. This city, which is to be built on a magnificent plan, will be located either in Europe or the United States and its inhabitants will be representatives from every country on the globe.

This plan for a World Capital is no idle dream of an idealist, but rather the conception of an intensely practical mind. The movement first had its inception several years ago in the fertile brain of the great Norwegian sculptor, Hendrick Christian Andersen. His first suggestion was merely that instead of meeting one year in Paris, another in London and the next in New York, as the learned societies had been doing, that they meet at some one point where an international headquarters would be maintained.

The idea met with marked approval and Mr Andersen at the expense of a great deal of time and money, worked at it most enthusiastically.

SOME OF THE PROJECTED BUILDINGS FOR INTERNATIONAL WORLD CENTRE
ERNEST M. DEBRARD, ARCHITECT

AIRPLANE VIEW, INTERNATIONAL WORLD CENTRE
ERNEST M. HEBRARD, ARCHITECT

The project grew and its further development demanded that such a headquarters would gather about it other interests requiring buildings, grounds, government and commerce.

Finally the really great idea took form in plans for a full-fledged city. There would be gathered the great colleges, headquarters for all important societies, clearing houses for the finances, the commerce, the arts of the world. Each country would still have its own great center or metropolis, these in turn communicating and exchanging information through the common center which would attract for a time each year the great and learned men of every land.

Mr. Andersen called to his aid some of the ablest architects in Paris and soon there evolved splendid plans for a wonderful city, great convention halls, universities, libraries, banks, municipal buildings, scientific institutions, gymnasiums, hospitals, boulevards, parks, market places—everything suited to the special wants of a monumental city with a population of 300,000 and room to grow indefinitely.

The plans for this city have now been completed along general lines and Mr. Andersen sees his mighty dream beginning to take tangible form. Mr. Ernest M. Hebrard, architect for the French government, has spent the last nine years perfecting these plans. Forty engineers, sculptors and painters have been employed under his able direction.

There remains only the selection of a site and the question as to how the nations of the world will finance the building of their capital. The site will be determined by vote at the first meeting of the House of Delegates of the "World Conscience" society.

The plans for the world capital contemplate a city of magnificent design with ideal climatic and sanitary conditions. The city will cover ten square miles.

Its heart will be devoted to buildings to be used for the purpose of promoting the unification of national interests. There are three general centers devoted respectively to physical culture, science and art. A vast stadium will be built with a natatorium and gynasia for men and women with physical culture colleges for the teaching of the best methods of each country.

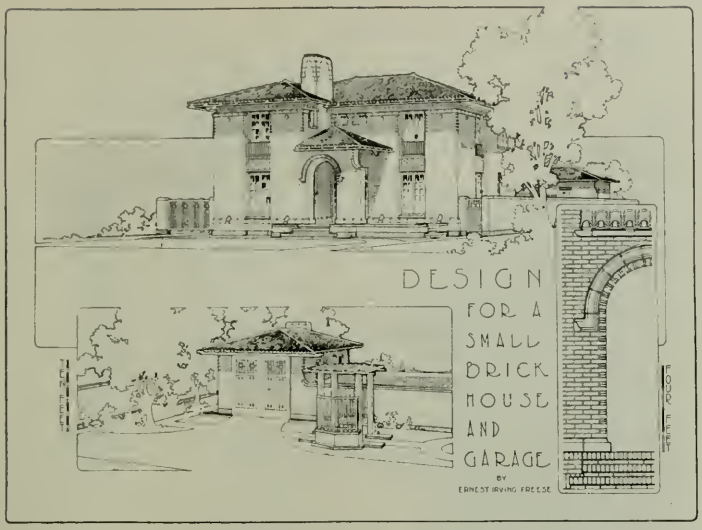
A temple of art, vast galleries, spacious halls and a great auditorium for presentation of the world's best music and drama will constitute the art center. The scientific center is connected with the center of arts and physical culture by the Avenue of Nations flanked on each side by palaces housing representatives of different countries.

The Tower of Progress is the crowning motive of the entire plan. It will be 1,000 feet high and built to accommodate international societies and a great world's press operated to mold public opinion along progressive lines. A plant of wireless telegraphy will be installed in the tower. This building will form the chief feature of the city and will be symbolic of the world's faith in unity.

There will be circular spaces set apart for international buildings for medicine, surgery, hygiene, law, electricity and invention, agriculture, transportation, an international clearing house and a world reference library.

Boulevards of great beauty will lead to the civic, commercial and residence portions. Every device known to modern science will be used to make this Capital of the World a city worthy of the name.

Only two modern cities have been planned deliberately as this World Capital has. They are the city of Washington and Camberra, the new capital of Australia, now under course of construction. The land on which this international capital will stand is to be owned by the government, subject to lease but not for sale, thus eliminating unlawful speculation.



The Small Brick House

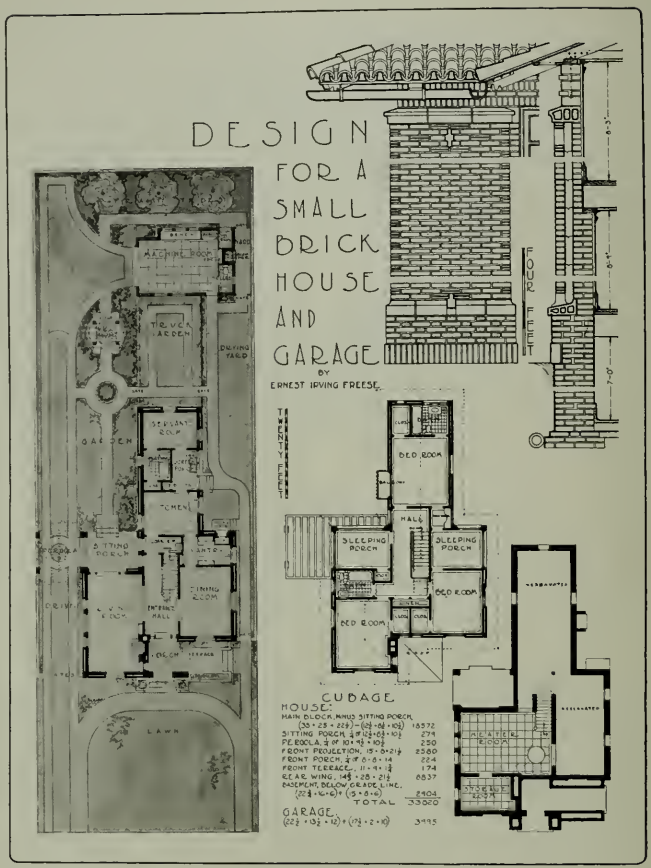
A Practical and Interesting Solution of a Difficult Problem in Planning and Design

By ERNEST IRVING FREESE, Architect

TO plan a house in your dreams is not a difficult thing. But to transmute the stuff of dreams into actual constructive materials, occupying actual space, in such a manner that each unit of the whole shall be in correct relation and proportion to other units and in proper configuration to the points of the compass; to do these things—to meet these requirements—in a given material, on a given plot of ground, for a pre-determined stipulated sum, and yet to do them in such a manner as not to batter and mutilate the dream house out of all recognition—that is difficult. It is difficult because of the limitations imposed. And, because of these limitations, it becomes a problem. If there were no limitations, there would be no difficulties, no problem—no architects! A dream is not a problem. It is a pleasant unreality. But the realization of that dream—well, that's usually an exceedingly difficult problem, and the solution is often a sad actuality.

It is not my intent to discourse upon the merits of the house of brick. Instead, I would offer a practical solution, from an architect's standpoint, of the problem presented at the outset of this article—the problem of the small brick house for a client possessed of limited means and an ordinary suburban plot of ground on which to build.

Briefly stated, the requirements and limitations are assumed as follows: The lot is level, 150 feet deep, 50 feet wide, and fronts toward the east. The nearest house adjacent is 14 feet from the northern lot line.



DESIGN FOR BRICK HOUSE AND GARAGE
ERNEST I. FREESE, ARCHITECT

Building restrictions fix the front line of the house at not less than 35 feet from the sidewalk. The requirements as to plan are a large-sized living-room, an entrance-hall, cloak-room, dining-room, pantry, kitchen, three main bedrooms with two bathrooms and two sleeping-porches, in addition to a servant's room and bath. There is also required a front-entrance-porch, a kitchen-porch, and a sitting-porch—the latter to be the connecting link between the living-room and the garden as well as directly connected with the entrance-hall and indirectly with the service portion of the house. The exterior walls of the house are to be of brick, trimmed with terra-cotta, and the roof of slate or tile. The cost of the house is not to exceed $8,500. In addition to the above, the garage—also to be of brick—is to cost not over $600. Another additional appropriation of about $300 is to be expended for walks, drive, garden accessories, fences, etc. The total outlay for house, garage and garden will then come within the maximum stipulated appropriation of $10,000, including architect's fees.

The two accompanying drawings indicate a solution of the above problem—a solution arrived at only after having discarded a half dozen other solutions that in one or more particulars did not adhere exactly to the requirements of the programme.

* * *

Importance of Fixing Reinforcing Bars While Pouring Concrete

IN ORDER that the reinforced concrete member may be moulded to exact specifications, it is important to prevent the reinforcing from being displaced while the concrete is being poured. An article appears in Building Age, by A. M. Wolf, C. E., regarding the above important feature in all concrete construction. In the early days of the use of reinforced concrete no special means of holding bars in position were employed. Sometimes an inch or so of concrete was placed, the bars laid on this and the remainder of the concrete poured. Then again, the upper portions of bent bars were supported on blocks of wood which were removed, or rather intended to be removed, after nearly all the concrete was in place. In many cases these were forgotten and left in the concrete. Another practice which is still current in many districts is to place the reinforcement directly on the forms and start pouring concrete. After an inch or more is poured, the bars are raised an indefinite amount by a common laborer armed with a hooked bar made for this purpose.

Anyone can readily see that all of the above mentioned methods are nothing more than makeshifts and deserve only condemnation. Where such shiftless methods are used, the actual position of the bars is very likely to be much different than that assumed by the designer, and the strength of the structure is more or less of a "gamble."*

This is neither good practice nor economy. The method and means of supporting the reinforcing bars should be clearly indicated on plans, these details being just as important as the proper location of the bends of bars and stirrups. Where bars are bent up into the tops of slabs and beams they can be best supported by cross bars of relatively small size resting on concrete blocks of a height to insure the exact location of bars. Bars in the bottoms of slabs can be kept at the proper height by small Z-

Editor's Note.- The position of reinforcing bars in any member of a structure is the result, or should be the result, of mathematical calculation. This position is just as important as the content of cement. A variation in the dimension commonly known as "K" may mean the failure of a beam, or the same variation in the diameter of the core of a column may mean its failure.

shaped metal clips and spacing bars, to which the reinforcing bars are wired.

Where reinforced concrete columns with spiral hooping are used it is essential the spiral be held rigidly from end to end so as to have the pitch of same uniform. This is easily done by the use of continuous spacers (of which there are various kinds) attached to the spirals at the time of fabrication. Three such spacers are sufficient for spirals of small core diameter (say up to 24 inches diameter), while for larger columns the spirals should have four spacers. The old practice of wiring the spiral at intervals to two or more of the longitudinal bars requires very rigid inspection to insure a good job, and even then there is great danger of the spirals being spread apart or misplaced while concreting the column. When the spirals are kept in shape by continuous spacers, they can be used as a form to wire the longitudinal bars at the proper spacing, thereby making the entire column reinforcement a unit and eliminating the danger of the steel becoming misplaced while the concrete is poured. The entire reinforcing unit for the column should then be wired to the forms in such a way as to keep the outside covering of concrete as near uniform as possible.

Before a concrete structure can be properly erected, someone must devise a means for holding bars in position during construction, and as a general rule a good designer is more capable of handling these details satisfactorily and to good advantage than anyone else. If such detail work is left to the contractor, the owners, if the contractor is a careful bidder, pay very dearly for this "designing service." In many cases it is very poor; on the other hand, if the contractor is not wide awake, he pays the bills. This, it can readily be seen, is neither fair nor economical, and is sure to add to the frequent occurrence of "wild" and "unbalanced" bids, especially on large contracts.

In the flat slab construction it is highly imperative that bars be kept in the proper position, namely, in the top of slab around column heads in the regions of negative moment and in the bottom of the slab at points between columns where the tension occurs in the bottom of the slab. This can be done for the portion where bars are in top of slab by using previously moulded concrete blocks, upon which the supporting bars can be held up from the forms by occasional Z-shaped clips or chains of steel, the bars being wired to transverse spacing bars.

When such methods are used the architect, engineer and owner can rest assured, other conditions being properly attended to, that the strength of a structure is more nearly in accordance with that computed than if the bars are blocked up temporarily on wood blocks which are removed as concreting progresses.

* * *

The Lock-Step Next

Scot—The Kaiser is melting up his builders' hardware.
Yank—I knew that some day we would get his knobs.—Building Age.

* * *

First Aid To The Insect

Architect—I wonder who first thought of the sleeping-porch.
Householder—I don't know, but I imagine it was some mosquito.—Ex.

GARDEN, RESIDENCE OF DR. HARRY ALDERSON, SAN FRANCISCO
Albert Farr, Architect

Home of Dr. Harry Alderson

THIS residence, newly erected on Green street, near Divisadero, in San Francisco, for Dr. Harry Alderson, presents an attempt to solve several local problems, viz.: to overcome the high banks of the Presidio district, gain a suitable approach with the necessary garage reached from within the building during inclement weather, and to preserve the view of San Francisco Bay and the Marin shores, as well as to express a home of cultured people.

In solving the various conditions set forth in the problem an echo of the later period of French Renaissance was chosen, refraining from following well-known exemplars of this style for obvious reasons. Relevant bits of detail were used, however, on the facade to give a necessary air of gayety to an otherwise too severe composition.

The lot being sixteen or more feet above the sidewalk, flights of steps relieved with flower-lined ramps bring the visitor to the main entrance at the main floor level. Below this, on the street grade, is the garage with space for two automobiles; from the garage a stairway leads to the basement story, which is partly supported by steel beams and a large truss. In the basement are servants' quarters and bath, laundry and an enclosed steam heating plant.

On the first floor is the vestibule, from which the main hall is reached by a flight of three steps, and from the main hall the living room opens toward the back of the house. This room, decorated in putty color with hangings

RESIDENCE OF DR. HARRY ALDERSON, SAN FRANCISCO
ALBERT FARR, ARCHITECT

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Albert Farr, Architect

RESIDENCE OF DR. HARRY ALDERSON, SAN FRANCISCO
Albert Farr, Architect

of Chinese chintz, has large French windows reaching from floor to ceiling and looks out upon a charming sunny garden, the work of Messrs. MacRorie & McLaren.

At the front of the house on this story is located the dining room, done in a soft greenish blue with painted furniture in harmony, overlooking the bay through long French windows as may be seen in the photographs presented with this article. The balance of this floor is taken up with kitchen, butler's pantry, rear hall with a lavatory and a maid's room.

Rising to the second story by means of a broad stairway, at the rear is placed the principal chamber, a large sunny bedroom with ample dressing room and bath therefrom. At the corresponding street end of the house is a family gathering room with a magnificent view of the Golden Gate. This room is decorated with paintings of the Hawaiian Islands, the former home of Mrs. Alderson. A large sunny guest room with a bath completes the floor. In the attic, where privacy may be found, is a large study and a well-fitted laboratory for the research work of the owner, the study giving off on a roof garden to the south. Large closets and ample store rooms are provided throughout the building.

While this home is not among the more ambitious mansions of the city, no pains have been spared to make it complete in all respects and particular attention has been given not only to arrangement and construction, but to the interior decoration which is softly colored and inviting.

* * *

Aggregate for Concrete Ships

One of the problems in concrete ship construction that is receiving much thought and attention is the selection of suitable aggregate. It is obvious that it is highly desirable to reduce the weight of concrete for ships to the lowest possible point, provided no sacrifice of strength or durability is entailed.

Three lines of investigation are being closely followed and tests now under way are expected to be a guide for future work. The materials considered are certain forms of volcanic rock which combine strength with lightness, over-burned clay, suitably crushed and graded, and some forms of slag. It is understood that the "Faith" was built of a mixture containing a large proportion of burned clay aggregate which made a light weight concrete.

Numerous deposits of volcanic rock, notably in New Mexico and Arizona, have been examined closely by the U. S. Geological Survey. Some of the deposits are favorably located, some are in the form of granular material and others in the form of volcanic ledge. It is understood that deposits have been located within shipping distance of both the Gulf and the Pacific coasts.

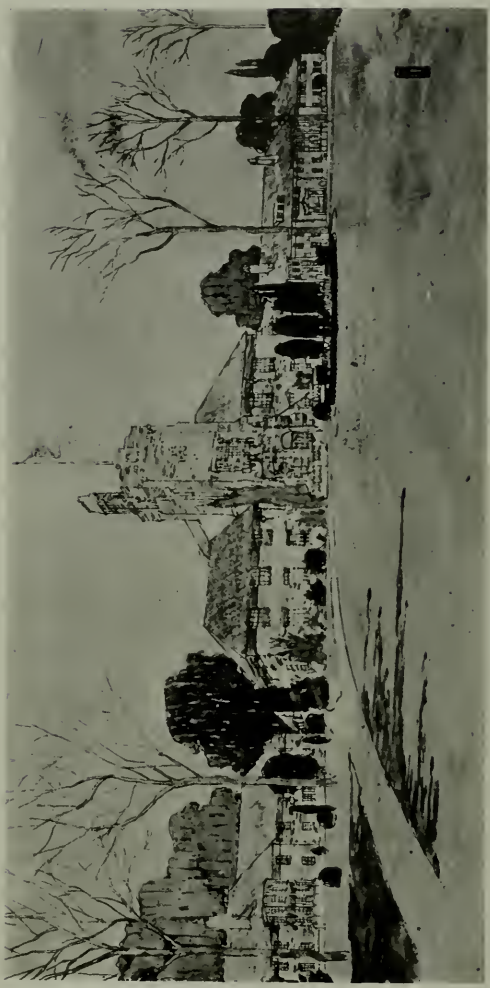
Experiments are also under way with slag products and it is expected that preliminary results will be made public in the near future.

* * *

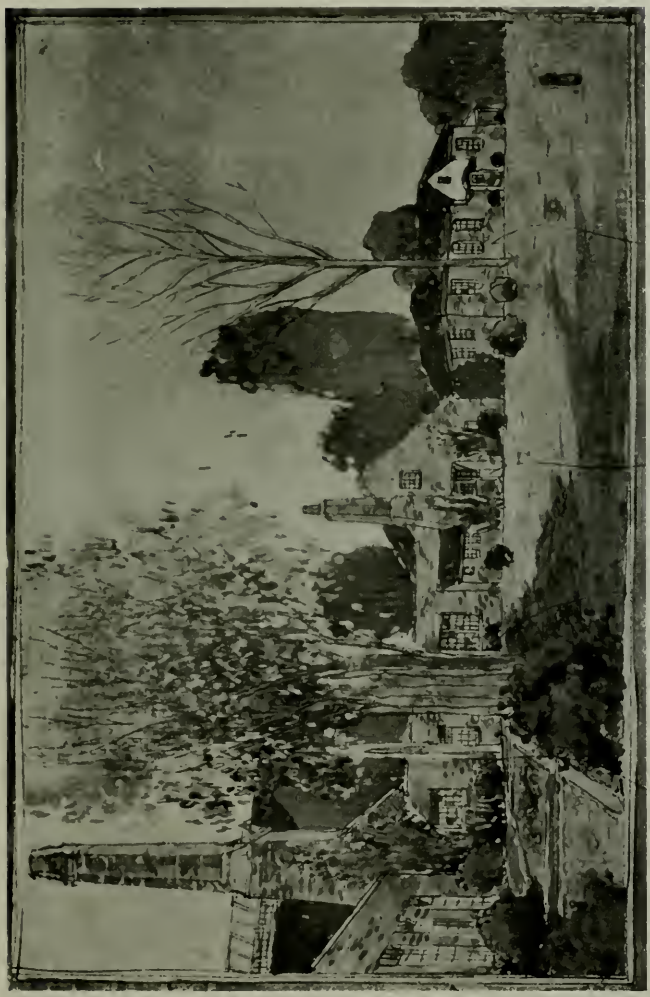
"Educational"

A school teacher instructed a pupil to procure a new book on grammar. Next day she received a note from the pupil's mother worded thus:

"I do not desire that my child shall ingage in grammer, as I preffer her ingage in yuseful studis, as I can learn her properly to rite and speke myself. I have went threw to grammers and can't say as they did me no good. I preffer her ingage in drawing and vocal music on the piano."



ADMINISTRATION BUILDING, NORWALK STATE HOSPITAL
BUREAU OF ARCHITECTURE, CALIFORNIA
STATE DEPARTMENT OF ENGINEERING



SKETCH FOR GROUP OF STATE BUILDINGS, BUREAU OF ARCHITECTURE, CALIFORNIA DEPARTMENT OF ENGINEERING

WATER TOWER, WHITTIER STATE SCHOOL
BUREAU OF ARCHITECTURE, CALIFORNIA
STATE DEPARTMENT OF ENGINEERING

Builders' Quantities — Contrasts and Suggestions

By CHARLES CRESSEY, Architect

THE prospect of returning to their former habits of peace should increase the lively interest of Americans in the adoption of schedules of material and labor, as the basis of building contracts. The obvious fairness of the system, when understood, must contrast pleasantly with the uncertainties and extravagance of present methods. The quantity system, good as it is, has, however, some troubles of its own. England has had the system for a time out of memory, and still presents chaotic conditions to warn and guide American men. Whilst it is desirable, and probably necessary that students of quantity surveying, should give close attention to British methods, it should be with minds alert, to the over-refinement of efficiency. The London practice or system, though theoretically, perhaps, the best, has made slow progress in the northern two-thirds of Great Britain, due to widely divergent modes of measurement and billing, in practically every county. This growth of varying habits can be avoided in America by the early adoption of standards of measurement, and bill forms, with great advantage to interchange of business and avoidance of disputes.

The London system recommends the fullest sub-division in detail for work under measurement. Stone work, for example, would have items for rough stone, in cube feet, followed by items in superficial feet for each stage of rough and finished labor. In all trades, rough and skeleton work are segregated as much as possible from finish items, and connection between the two is often lost. The surveyor condenses the bill as much as he can by "collecting" similar labors forming parts of differing main items and may give the estimator little clue to the location of the work on the building and the ease of handling the particular units. In elaborate masonry, many pages of billed items for labor may occur to which estimators attach no individual prices, merely perusing and adding a general allowance for labor, to the price per cube foot of stone in the item for material, which item may be in itself deceptive by the use of practically net squared sizes of stone for cubing. This general matter of net measure has importance, when some men allow only strict lengths, in place, and others, in timbers, for instance, allow the nearest shipping length, both stating "items measured net" in the preamble. Again, in brick work "net" may mean strict deduction of all openings, while some surveyors contend that it is unfair to deduct smaller voids, each side, however, duly figuring "feet run, extra labor and waste to jambs." Brick walls are usually "collected" to an equivalent area of wall one and one-half bricks thick, but this very often fails to average the prices of labor, scaffolding, etc., when a high proportion of thin walls occur. The collecting is done to simplify the routine and items in quantity work at the time of estimating for bids, but the schedule is liable to be of little use to the contractor when ordering material or checking items as the work is in progress.

The North of England systems of quantities, variable and hard to define as they may seem to those trained in London practice, appear to the writer to contain the real basis for a practical American system. The Manchester (or Lancashire) method, has the advantage of bringing to a focus the best points of the various northern systems, largely due to a code of rules published by the Manchester Society of Architects. This system has a main feature of making each trade self-contained, thus allowing separate trade

bids, or combined figures, at will, and particularly avoiding those vague general clauses, such as cause endless dispute where specifying is done only in the light of a general contract.

Broadly, the Manchester schedules, group material and labor together; that is to say, a molded stone belt would be itemized complete in feet run, of a certain section, with worked and molded girth stated; also the average length of stones, dowel joints, hoisting height, and other facts, either in one clause or in sequence to the main item. The above implies that London has advantage over Manchester in brevity of the actual bill of quantities, due to the numerous collections. This is sometimes true, but the fact of items in the Manchester plan being self-contained, promptly identified, and automatically checked as the building proceeds is of immense value to the contractor's staff, and makes estimates for progress certificates and final accounts a simple matter, in addition to the facility for ordering material. *Quantities should not merely serve for making quick estimates and as evidence of the limits of the contract, but in America have a special duty in relieving the pressure of conducting actual work.*

Affecting brevity, the London system, however, always includes a specification, more or less ponderous and verbose, as a separate document, whilst in the Manchester practice, though the full or a condensed form of specification is met with, it has latterly become more general to make the "Specification and Bill of Quantities" in one document, with a set of "Conditions of Contract" common to all trades attached as a preamble. This combined document is very convenient, both in pricing and during conduct of the work, saving cross-references and much risk of contradiction and argument. The combined form of course requires happy collaboration between the architect and the surveyor, but the latter will rapidly sense intentions, from notes and explanations, with perusal of former specifying by the individual architect. Many British architects are themselves qualified quantity surveyors, following the practice for their own work only. In office routine, the London method is in three divisions, viz.: "Taking off" (or details of measurements) in which the surveyor measures a certain part of the building in all its trades, before repeating the operation in another part, thereby obtaining a series of minor totals, which are later collected and summed up in the "Abstract of Items" and afterwards transferred to the "Bill of Quantities" in trade order, plus condensed notes from the specification, to which the estimator is referred for full explanation.

The Manchester plan is simpler, being in two divisions only, viz.: "Detail Quantities" and "Specification and Bill of Quantities," the first being detail measurements confined to one class of work at a time, brick work of one kind, for instance, being followed throughout the plans, before "taking off" another kind in the same manner. Totals are footed on the take-off or detail sheets and transferred to the Schedule or Bill, largely in the order of progress at the building, with trade classifications well defined and concise specification clauses added. As this specification refers item by item to particular work, the system kills any tendency to profound generalities. It is common to find drawings sketched in the body of the specification where copies are lithographed, or on a separate sheet connected by numbers, in other cases.

One feature of all well-conceived schedules is to render reference to the building plans almost unnecessary for bidding purposes. Architects often issue the quantities whilst the drawings are still in pencil, taking the opportunity to gain time for finishing work, though this is not a habit for recommendation. Copies of plans are not furnished to bidders, but are kept convenient for inspection only, with advantage to the pocket of the always de-

serving architect. British quantity surveyors are paid $2\frac{1}{2}$ per cent commission on average work and $1\frac{1}{2}$ per cent on plain heavy work, plus a charge per page for copies. Formerly these payments were itemized and included in all bids, and paid out later by the accepted bidder, but many offices now adopt the better method and charge direct to the client. Charges for quantities include also, reasonable adjustment of items for final accounts, but if variations cause re-measuring, an extra charge of 1 per cent upwards is made on work affected. English legal decisions and custom make a surveyor liable for inaccuracies in his schedules, subject to his right to offset omissions by items of excess. It is surprisingly rare to have this question raised, and apart from gross evidence of neglect, a client will mostly pay for omissions when convinced (and it is usually easy to prove) that he is not paying twice for his work. This obvious fairness of quantity schedules, smooths building life and forces all parties by cold facts to see what is the real contract.

One objection to quantities commonly raised in America is the positive assurance that collusion and graft would follow the use of the system. This melancholy pride is an amusing assumption that a monopoly of building wickedness exists on this side of the water. The timid may be assured that with quantities sufficiently detailed on the Manchester plan, the dishonest man takes many times the risk of exposure to that incurred under the existing system of a general specification.

* * *

Vacant Houses in San Francisco and The Commuter

By A. W. SMITH, Architect

YOU cannot raise clover seed unless your fields are full of bumblebees. That sounds odd, doesn't it? Well, it isn't strange when you know why, and the why is because the bee pollenizes the clover blossoms. The title "Vacant Houses in San Francisco and the Commuter," at first reading seems ambiguous, since the vacant house is in San Francisco and the commuter lives where he commutes. Nevertheless there is a very close relation between the two which I shall endeavor to make clear. One has only to look around him and he will find in San Francisco a lamentable number of vacant houses and tenantless flats. The average East Bay renter could doze a half hour longer these cold mornings, while at night he could reach home a half hour earlier if he occupied one of these vacant houses, but something leads him across the Bay. What is it? Not the San Francisco winds, because he commutes to Northbrae, and there they have a patent contrivance running under the floors which automatically shuts the back door when the front door is opened, and they need it, because there have been instances when both doors were carelessly left open and the wind blew all furniture out of the houses. It isn't the fog, for Oakland and Berkeley get that, too. What is it, then, that induces thirty-five thousand people to daily get on a street car, get off of it and board a Key Route or S. P. train, get off of it onto a boat, get off the boat and onto another street car and finally reach their place of business, only to repeat the performance at the end of a hard day's work?

The reason is the twenty-five foot lot. The tenantless flats and houses of San Francisco are built close together, on twenty-five foot lots, where they get light in front and rear only. To be sure they have light wells

as small as the law permits, on their sides, where the light of day but dimly penetrates and where the odor of stale linen and fried onions clings tenaciously in the stagnant air.

Now, when the farmer discovered he couldn't raise clover seed and found out why he couldn't, he imported the bumblebee. In the case of San Francisco's twenty-five foot lots—we cannot enlarge them, no matter how desirable it would be to do so, nor can we legally compel every other house to be torn down so as to give light and air.

There are in San Francisco today approximately six thousand vacant houses and flats representing an average investment of land and building of four thousand dollars each, a total of nearly twenty-four millions of dollars. On this vast sum are paid taxes and insurance, minus returns. It is worse than investing in pool tickets on a horse race, because once in a great while you might win in the pool room and at the worst the agony is soon over, your money is gone—there is no suspense; there are no years of taxes and insurance and repairs.

What we can do is to enact and enforce laws requiring large light courts and generous yards, making these laws apply to old buildings as well as to new ones. You can make these restrictions hold by condemning as unfit for habitation any building not in conformity with the requirements.

Without going into minute detail let us suggest light, window and yard areas as follows:

Yard areas, corner lots, rear yards 10 per cent of depth of lot.

Yard areas, inside lots, one-story houses, 10 per cent of depth of lot; two-story houses, 15 per cent of depth of lot; three-story houses, 20 per cent of depth of lot; more than three stories, 30 per cent of depth of lot.

Light court areas for living rooms, bedrooms, kitchen and pantries:

One-story houses, minimum area, 100 sq. ft.; minimum width, 6 ft.
Two-story houses, minimum area, 160 sq. ft.; minimum width, 8 ft.
Three-story houses, minimum area, 240 sq. ft.; minimum width, 10 ft.
Four-story houses, minimum area, 360 sq. ft.; minimum width, 10 ft.
More than four stories, minimum area, 500 sq. ft.; minimum width, 10 ft.

Light court areas on which are located only bath rooms, toilets, and halls, one-half the foregoing court areas and three-fourths the minimum width.

Window area required to be as follows: In living rooms and bedrooms, not less than forty square feet of glass on a yard, street front or court. In kitchens and pantries, thirty square feet, and in bath rooms and toilets not less than twenty-five square feet of glass.

The requirements are not impossible, and in the end would prove a good investment. Common sense will tell you, that in the case of the usual vacant flat, if one of the center rooms is torn out altogether and light and sun put into the middle of the building, it would then not only rent but bring as much income if not more than before.

Now there are, of course, some other reasons for the commuter being a commuter. One is that every new dwelling in our suburban communities is plastered outside. The innocent commuter calls them "cement" houses. When you hear him talk you would think they were made of reinforced concrete. He won't buy or rent anything but a "cement" house. Let us make a law requiring that every wall within twenty-five feet of any other building (in a horizontal line) shall be plastered with cement plaster on some sort of metal fabric. Our buildings will then please the commuter and they will be very much less of a fire menace, for a cement-plastered

wall will not burn with the readiness of a rustic wall. We can require this on all old walls as a fire preventative. If you give the man who sprints to catch the boat a house with light and air and a back yard, if you give him a home which is a "cement house," if you will put in hard wood floors and white enamel your bedrooms and kitchens; if you do these things he will soon fill that twenty-four million dollars of non-interest-bearing property.

The writer is a resident in an East Bay city. He has built a lot of places where these commuters abide. Just now there is a great scarcity of vacant houses on his side of the bay, but you cannot get a commuter to move back to San Francisco. The moment you tell him of a fine vacant flat across the bay, then the picture comes in his mind of the long and narrow *dark* hall, of the *dark* and stuffy bedrooms, of the view of the cheap rustic rear and side walls of the other houses, and you couldn't drag him back to live in such a home, not with a steel cable and a hoisting engine.

This article is written for the purpose of starting a discussion on this subject. The East Bay cities are growing apace. There you will not find any blocks which are 50 per cent vacant, nor 30 per cent, nor 10 per cent. For years they have not averaged 10 per cent vacant, so that it is not a war nor a shipyard condition that has brought the renter to them. For years the only non-renting places they have had have been those of an ancient vintage, with rustic walls and planned after the fashion of your San Francisco places.

San Francisco has a less number of school children attending its public schools than has Los Angeles, in spite of the fact of greater population. Why? Because the average family will live where it may enjoy sunlight, air, yards, space, hardwood floors, modern interior finish and "cement houses."

The remodelling of the thousands of flats and residences along the lines suggested will give employment to your own mechanics, the material will come from your own dealers, the renters you will obtain will buy their groceries and dry goods from you and not from Oakland, Berkeley, and Alameda, and the money will all or mostly all remain where it is earned.

We of the East Bay have a great sympathy for you. As things are going, we can see that in a few years you will have nothing but banks and wholesale houses on your side of the bay, together with some hotels, a Greek and an Italian quarter, and a Chinatown. Let's start something. Possibly I have already!

* * *

The Architectural "V"

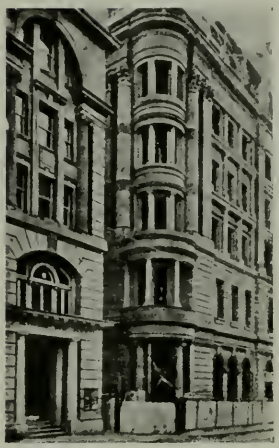
The question may be in order—among others—whether or not the too-heavy use of the "V" in place of "U" in architectural spelling has not served to spread abroad an impression that architects in general are impractical and not to be entrusted with Government work in war-time?

At any rate, the extraordinary—and archaic—use of the "V" by architects and draftsmen has for many years been a puzzle to the layman. It has been tolerated as one of the things not understood; and hazily the client or banker or whomsoever it might be, has considered that somehow, or in some way, it was logical and had a reason.

In reality, there is little or no reason for the continued use of the architectural "V," and it is misleading in giving the public an erroneous conception of the modern architect's true attitude toward practical matters.—Building Review.

Architectural Criticism

(From the Architect, Builder & Engineer, Cape Town)



A Sydney Building that is being severely criticised for its Architecture.

OUR contemporary, Building, published in Sydney, is very outspoken in its criticism of buildings which are being erected there. We publish an illustration showing the treatment of a corner which greatly offends that journal's taste. The article states:

It was hoped that, as the work neared completion, the poor effect produced by the architecture of the lower stories might have been redeemed, but instead the work has become more lamentable as it progresses upward. On the ground floor there is a pair of Ionic columns, misplaced, overburdened and with such a huge projection as to give the thing an appearance of instability. Above these columns are smaller columns of an earlier order and little may be said of these, other than that they enhance the effect of overloading on the columns below; as the work has now been completed the greatest architectural outrage of many that this corner embodies is revealed: this consists of the placing in the top story of two great rectangular piers of stone, hideous enough in their lack of adornment, but producing an effect suggestive of an utter want of knowledge on the part of the designer and a crushing effect on the lighter cylindrical columns below them. These support an entablature proportioned according to the dimensions of the huge engaged columns at the side, hence the entablature becomes incongruous when carried by these stone slabs.

This would be a lively world if we were all so engagingly truthful.

* * *

Southwest Contractor of Los Angeles thinks there is little to be gained by such frank criticism as the Sydney paper offers. To quote the Southern California organ:

"This sort of criticism doubtless would please a southern architectural journal which laments the lack of criticism in the United States. But is it really worth while? It does not remove the unsightly structure, but merely serves to accentuate its ugliness in the public mind; nor does it prevent a repetition of architectural blunders How much better it would have been to have subjected the plans for this building to criticism before the work was started. That is the proper time for real constructive criticism. If there is anything in the design of a building that is calculated to offend the eye it should be eliminated in the plans. This theory of progress has been recognized by the creation of art commissions in many cities in the United States to pass upon plans for public buildings and structures of all kinds before they are erected. This principle of constructive criticism should be extended. American architects, as a rule, are open-minded and are not only willing, but anxious to have their designs criticised by persons competent to criticise, before the work is executed.

"The architect acquires a knowledge of good architecture by study, because that is his business. The public can only acquire it by observation. The more examples of good architecture that are placed before it the better it will be able to discriminate. It will be able to pick out the unsightly structures and it will not tolerate manifest errors in design. Only good architecture will satisfy it."

* * *

A Business Building in China

THEY'VE just completed a new department store and hotel at Shanghai, China. If there is anything in the civilization of the Occident that will beat it very much The Improvement Bulletin would like to know where it is. In fact, whoever heard of shop fixtures of solid teak, in the Orient. Yet that is what they have in this Chinese store.

Mr. William Hutchinson, clerk at the United States consulate at Shanghai, is authority for the statement that the shop window frames and showcase frames are of molded copper, and all the sun blinds are covered with the same material, forming the most modern and attractive group of windows for the display of merchandise in Shanghai. The whole of the structure, excepting the partition walls, is of reinforced concrete. The area of the floors is 180,000 square feet.

The building is just completed from the design of Palmer & Turner, architects and surveyors, of Shanghai and Hongkong, and owned by the Wing On Co., of Hongkong and Sydney. It was opened for business on Thursday, September 5, 1918. It is located between Nanking and Chekiang Roads, and is under the management of Mr. F. T. Young.

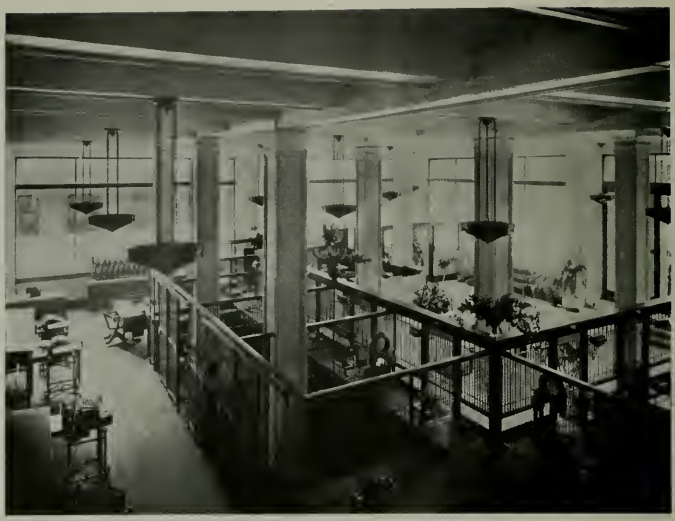
The store is entirely cut off from the hotel and other parts by fire walls and fire doors, and a special hydrant installation has been designed to protect the premises against fire.

The chief features of the store are the spacious display spaces. The floors are of white terrazzo, with red borders, and the shop fixtures and display cases of solid teak. There are five floors, on which are placed the several departments. On the fifth floor are the amusement rooms and tea garden, illuminated with electric lights.

The hotel, operated in conjunction with the store, is named the Great Eastern Hotel. It has an open-columned lounge hall on the ground floor of over 160 feet in length for reception purposes, and the floor is paved with white terrazzo. It is heated by radiators and floor grills, and, in addition, there are open fireplaces. The four upper floors consist of fully furnished suites of rooms, bedrooms, and toilet and service rooms, all of which face south. There is a central reception room. On the fifth floor is the dining room of over 160 feet in length, with low partitions paneled in white ornamented wood.

The building cost approximately $700,000, and the stock carried is valued at approximately $1,000,000, consisting of foreign and native goods. Fully two-thirds of the stock is foreign imported merchandise, and of this 75 per cent was imported from the United States.

The chief lines carried are Chinese silk and foreign piece goods, hardware, fancy goods, crockery and porcelains, electro-plated ware, jewelry, groceries and provisions, wines, and furniture manufactured at Shanghai. Practically everything needed may be found on the premises.



GENERAL VIEW OF BANKING ROOM, SHOWING CAGES

CASHIER'S PUBLIC OFFICE, FIRST BANK OF HILO
Charles H. Will, Architect

MAIN BANKING ROOM, FIRST BANK OF HILO
Charles H. Will, Architect

New Home of First Bank of Hilo

The First Bank of Hilo recently moved into its new home in the Masonic building, from plans by Mr. Charles H. Will, a leading architect in the Hawaiian Islands. The bank interior is unique in many respects and its splendid arrangement, including the detailing of the counters, counter screens and vault construction, and the marble work was planned by Mr. E. J. Reed, vice-president of the Waterhouse Office Outfitting Co., Ltd., of Honolulu.

One striking feature of the interior is that all tellers' cages and partition work are elevated five inches from the floor, giving absolute clear space for sweeping and cleaning purposes. The work is designed on straight lines, thereby eliminating as much as possible dust-catching surfaces.

The marble work in the public lobby consists of San Saba, a new Texas marble used for counter front and wainscoting. The floor is in Columbia marble tile. All exposed surfaces of the metal work have been hand grained to match Hawaiian Crouch Grain Koa and is so perfectly imitated that the old-time residents of Hilo declared the same to be the regular Koa wood. All the work back of the counter is in the regular olive green standard finish.

There are eight cages. Four of these are used as combined paying and receiving cages, one for the note teller, two for the savings department and one for exchange.

The public cashier's office contains two desks, one for the cashier, and one for the assistant cashier and adjacent to this is the cashier's private consultation room; also a sound-proof long distance telephone booth.

The cashier's general office overlooks the entire banking room. On the opposite side of the room directly across from the cashier's general office is the ladies' comfort room.

There is also included an automatic tube system with sixteen out and inner stations connecting every department of the bank, trust, real esate and insurance departments.

There are two vaults, one of which is being used as a book vault, the other for coin and securities, with the interior arrangement of each designed to meet the requirements of the institution for not less than twenty-five years in the future.

There is a telephone system whereby all cages and officials have telephone communication with outside lines.

The entire work was undertaken and installed by territorial labor. Every device that is being used in the up-to-date mainland banks has been included in this institution.

* * *

Good Architecture as a Profitable Investment for the Owner

THERE still remain in this world persons who believe that architecture is a purely ornamental profession—that the man who retains the service of an architect to plan and superintend the construction of a building does so because he wants a few additional artistic effects, for which he is able and willing to pay.

The increased cost of building materials has been a pronounced factor in educating the public regarding the true field of usefulness which the architect occupies. A score of years ago a few thousand dollars sufficed to build a large box-like structure, with a great deal of room, but with no architectural merit. Architecture played very little part in the vast majority of buildings built a score of years ago. But when costs multiplied, owners naturally devoted more thought to the underlying requirements of good building construction. The architect is on a very much higher plane than he was a score of years ago, and the public is beginning to have a growing conception of the important role the architect should play in the development of the country.

It does not require any considerable knowledge of architecture to appreciate the superior appearance presented by any community in which the services of an architect are utilized in the construction of new buildings.

There are still a good many small communities in the country in which the carpenter and the mason are consulted rather than the architect when a new building is to be constructed. The layman does not stop to consider when he encounters such a community whether the business and public buildings and the residences were planned by a competent architect. He merely knows whether the town is pleasing to the eye—whether it bears the mark of distinction that the prevalence of good architecture imparts to any community. The first impression that he gathers from his initial visit to a town is generally the lasting impression, and more than nine times out of ten it is correct.

For it is usually true (probably invariably true would be a safe statement) that a town in which the representative citizens appreciate good

architecture, is a better town in which to live than a community in which scant heed is paid to the call of art. The citizens of the town in which the architect is called in to design business buildings and residences—even though the buildings be of small dimensions—have, as a rule, a wider intellectual horizon than men who believe that architecture is merely useless ornamentation, and that the carpenter and the bricklayer can create a building of harmonious and attractive design.

Then again, it is true that the citizen who wants an architect to design his building, is generally a shrewd and long-headed individual as compared with the man who believes in paring down expenses by eliminating the architect's fee. The architect who is master of his profession must not only plan a building of harmonious design, and attractive appearance, but he must keep constantly in mind the matter of practical every-day utility. There must be no waste corners in the completed building, the interior must meet modern requirements of light and ventilation, the heating plant must be adequate, and yet there must be no waste of either material used in construction or fuel. The building must be planned with close attention to the purpose for which it is intended, in order that the interior arrangement may be completed to the end that the owner, instead of finding after the lapse of a few months or a few years that there are many features of the building with which he is not satisfied, will have an increasing satisfaction in the ownership of the building.

Good architecture increases the value of a building. That is a point that the astute owner always keeps in mind. Five thousand dollars or ten thousand dollars will buy just about so much material in any market. But five thousand dollars worth of material built into a finished structure of architectural excellence, has a higher market value than an equal or greater amount of material used in the construction of a building that is not pleasing to the discriminating eye, and is not arranged with a view to practical requirements.—Improvement Bulletin

* * *

Decay in Buildings

Research was recently started by the Forest Products Laboratory to determine the "killing points" in temperature and humidity of common fungi found in American buildings. Field and laboratory studies indicate that much more care should be exercised in the selection of timber and in the construction of buildings to avoid conditions favorable to decay. A number of inspections of buildings which have given trouble on account of decay have shown that any one of the following causes may result in rapid deterioration of the building:

1. The use of green timber.
2. Allowing timber to get wet during construction.
3. Allowing the timber to absorb moisture after the building is finished because of leaks or lack of ventilation.
4. The use of timbers containing too much sapwood.
5. The use of timbers which have already started to decay.

The avoidance of these conditions will as a rule, it is said, prevent decay. In special cases, however, decay can only be prevented by preservative treatment. It is stated that for this purpose salts, such as zinc chloride and sodium fluoride, are better than creosote for buildings.

INTERIOR OF SANTA BARBARA CHURCH, SHOWING TRIM OF CONCRETE STONE
Frohman & Martin, Architects

WINDOW TRACERY OF CONCRETE STONE
Frohman & Martin, Architects

Concrete Stone Trim for Two California Churches

THE accompanying illustrations, presented by courtesy of Concrete of Detroit, show two California churches—Trinity, at Santa Barbara, and the Church of the Holy Faith, Inglewood, with trim of concrete stone.

The designer is Mr. Hubert Frohman, of the firm of Hubert Frohman and Harold H. Martin. Writing Concrete of the use of concrete stone on these two interesting works, Mr. Martin expresses a most rational view of the manufactured stone. He says:

The concrete stone was made by Mr. William Smith, Pasadena, by trade a stonemason. Mr. Smith has been in the cement stone business at least 15 years.

There is little good building stone in Southern California, making the use of some other material imperative. As we trace architecture from its earliest cradle in the valley of the Nile we find it has been the task of the architect to use materials close at hand and adapt them to their purpose in building. No doubt the ancient Egyptian traveler thought the bricks of Assyria a cheap imitation of stone after the huge masses of granite piled up in pyramids above the tombs of their kings. Three thousand years have elapsed and who today would consider brick an imitation stone? So cement stone, as I prefer to call it, is establishing itself as a permanent construction material.

In the first place, cement stone labored under many drawbacks. It was given a rock face or a chiseled surface and christened "artificial stone"—so little faith had its first users in the very article they were promoting!

We have used it in our churches in a straightforward and honest way, letting the material speak for itself. In Trinity Church, Santa Barbara, the main body of the walls is of Santa Barbara sandstone, the trim, including molds, arches, piers, and window tracery, of concrete stone. I know full well in the centuries to come, when the stone and the cement stone, side by side, have their long fight with the element and time, that the cement stone will more than hold its own, so why should it bow its head and be called "artificial." The Inglewood Church is of brick and reinforced concrete, stucco and concrete trim stone.

The product was made in molds of redwood, well shellacked. After the concrete is well tamped in by hand, the mold is turned over, at once, so stone rests on bed and mold is unclamped and taken off; stone is kept wet for at least ten days in shed.

The whole knack in making concrete stone is in knowing just how little water to put with the mixture, to make the cement adhere to the particles of aggregate.

The facing is put into mold first, care being taken to spread some over exposed surfaces by hand. It is composed of one part cement and two and one-half parts of clean sharp sand. Different cements, sands and coloring matter may be used as desired. Materials must be thoroughly mixed while dry, so each individual stone is of uniform color; also care should be taken that separate stones are slightly different in shade. Then the backing is filled in, composed of rough concrete, one to five, no aggregate larger than one-half inch. Forms must be rigid enough so concrete can be well rammed.

If the materials are mixed correctly, the surface will be found perfect as it comes from the mold. If any arrises become defaced in taking off mold, these can be patched, if done at once, by using a mason's pointing

VIEW SHOWING EFFECT OF CONCRETE TRIM STONE IN FIELD OF NATURAL SANDSTONE

PARISH HALL, CHURCH AND RECTORY, CHURCH OF HOLY FAITH, INGLEWOOD, CAL.

Reinforced Concrete and Brick Covered with Stucco and Concrete Stone Trim.

tools. In detailing cement stone all arrises should be shown slightly rounded.

As the concrete is put into molds in an almost dry state, and when set it is not quite waterproof; all beds of exterior work should be waterproofed. Also all outer surfaces. [It is of course unnecessary to use so dry a mix that the resulting stone is forever "thirsty." Many concrete stone manufacturers are learning how to make the "happy medium" in consistency of mix—the consistency that gives maximum strength and density.] It would be idle speculation to estimate comparative cost of concrete work as window tracery in the State, and freight rates being too high even to consider the matter of bringing it from outside, when we have all the sand we could wish, and as good if not better cement than one can find the world over, right at our very door.

* * *

Early Revival of Building Predicted

By CLARENCE R. WARD, Architect

WAR profiteering is over, or nearly so. In spite of more or less successful efforts to prevent it, it has existed, due partially to "combination" of producers and partly to circumstances.

There are three great business fundamentals—competition, supply and demand. These fundamentals have worked for the past four years principally for the benefit of the producers. They should now begin to operate for the benefit of the consumer.

I am optimistic enough to believe that this new condition will benefit building operations at a much earlier date than is generally expected.

The cessation of war activities will release upon the market vast quantities of building materials, as well as machinery for their manufacture. To this condition add the release of vast numbers of artisans and laboring people of all classes and men coming back from the service. This will produce a spirit of competition which does not now exist. In fact, it will be a healthy stimulus to the morale of producers and working people and will result in greater productiveness, even though the present wage scale should be maintained.

Such conditions should shortly tend materially to reduce the cost of building construction. In turn this should prove interesting to investors in real estate and buildings—men who have not recently been able to figure a reasonable return on building investments owing to present high costs.

A very large amount of necessary building must be done in this country before the readjustment of affairs in foreign countries stimulates the reconstruction of what has been destroyed.

As the world will look to the United States to furnish a very considerable proportion of materials necessary to rehabilitate regions devastated by war, it therefore behooves the investor here to get busy immediately. At least he should have his plans ready, thus enabling him to strike while the iron is hot.

* * *

A Dumb Good Idea

Waiter—We have a dumbwaiter to bring the food up from the kitchen.
Patron—Well, I wish that you also had one to serve it.—Exchange.

Ford's Idea of a House

Henry Ford's taste, or lack of taste, in matters of art has been one of the handles which the newspapers and magazines have taken hold of to keep the inventor of the tin lizzie in the limelight. So this is one of the subjects which came up when Ford was being interviewed for Collier's by Lucien Cary.

The interviewer suggested that art was not solely a matter of painting in oils; that art was either present or unhappily absent in every work of man; that, for instance, one's dissatisfaction with the spectacle of a bay window projecting from the side of a house without visible support was an esthetic dissatisfaction.

"Oh, houses!" said Mr. Ford. "I can appreciate them. Why, once I saw a little house about fifty-five miles from here, and I thought it was the finest little house I had ever seen. And I went home and told Mrs. Ford what a nice little house it was, and I said it was fifty-five miles from here, but I was going to take her to see it because it was the nicest little house I had ever seen. And I took her over there, and she liked it just as well as I did. But then I showed that house to a brother-in-law of mine, and he just criticised it to pieces nearly. He even got me to thinking that several things about it weren't as nice as I thought they were at first. He was a good judge—you see."

He finished the sentence with a smile, a smile at the hopelessness of reaching agreement in artistic judgments.

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The Big Men

The big men dare, and the big men do;
They dream great dreams, which they make come true.
They bridge the rivers and link the plains,
And gird the land with their railway trains;
They make the desert break forth in bloom,
They send the cataract through a flume
To turn the wheels of a thousand mills
And bring the coin to a nation's tills;
The big men work, and the big men plan,
And, helping themselves, help their fellow man.

—Walt Mason.

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Highest Tower for Pouring Concrete

At Columbus, Ohio, is the highest tower for pouring concrete on record. From a distance it looms up like the Washington monument. The tower is part of an equipment that is to be used in making Columbus safe from floods. It is 175 feet high and built entirely of wood.

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Heredity

"Do you believe in heredity?"

"Yes," said the school teacher, "there's a little boy in my class who has to return home every day for his books, pencils and pees. His father's a plumber."

BUSINESS SECTION, LAKE FOREST, ILL., BEFORE REBUILDING

The buildings on the entire street between the two arrows were torn down and a hollow square 400 feet on a side was laid out in the space behind this row of buildings.

A Plea for Better Business Centers in Our Suburban Towns

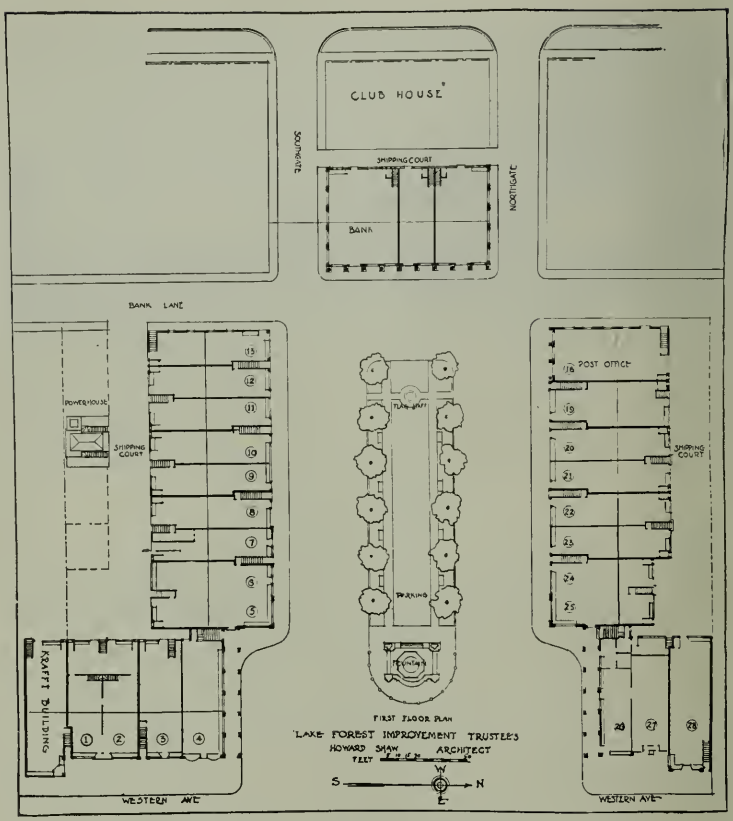
By ALBERT FARR, Architect

NO one but a madman or one compelled by necessity desires to spend all of his days and the end of them in a great city. To those with sober judgment and with some reward for toil come thoughts of a place in the country not too far from a shopping center and that does not too closely resemble the Babylon from which the departer has fled.

With this foreword it is to be hoped that this number of The Architect and Engineer of California may find its way into the hands of some of our inland town officials who, perchance, may be seeking improvements capable of attracting purposeful dwellers within or near them.

In traveling along the highways of California, the observer finds few of our cities that have a comprehensive center or a proper approach, as almost all of them trail along the road with the airy grace of a broken shoe string, and before the nucleus of a place is fixed in mind, one is again on the drab highway. Of our smaller villages I know of but one, the pre-Gringo town of San Juan Bautista, with its plaza undisturbed from before "the days of gold," that invites a closer acquaintance, or imbues one with a desire to rest from the fatigue of travel. The existence of this single example is probably due to the mere fact that it has presented no attraction to the exploiter with his sham fruits and blaring plate glass.

With the foregoing in mind it is pleasing to see such a suggestive grouping for a small place as is presented in the charming center of Lake Forest, Ill., which reflects credit not only on the designer, Mr. Howard Shaw, architect, but also on its civic authorities. The photographs illustrating this article, shown by courtesy of the Interlocker, published by the Dennison Block Company, present clearly the elimination of the straight roadway, the disposing of the repellant waste spaces usual at the back of small town stores, and the restraint from the all too general mimicking of a great city; a neighborly place free from smoke, street cars and the other ills of modern cliff dwellers.



PLAN OF IMPROVEMENT, LAKE FOREST, ILL.

Such a place must be a delightful spot where not only the rancher from the back country, be he gentleman or practical, can drive from store to store in doing his marketing and also find a place to park his "tin Lizzie" or tie his team without interfering with, or being interrupted by, the through traffic; but it would be hard to conceive of a speed maniac so perverse as not to seek for an excuse a few purchases in order that he might linger and enjoy the shaded enclosure and incidentally investigate the shops or refreshment places which should be found in such a square.

Along the all too monotonous stretches of our recently constructed California State Highway, similar improvements would seem not only desirous but would undoubtedly add to the fame and business of our smaller cities.

DETAIL VIEW OF MARKET SQUARE, LAKE FOREST, ILL.
Howard Shaw, Architect
Showing the variety of treatment obtained in the different buildings

VIEW OF MARKET SQUARE, LAKE FOREST, ILL.
Howard Shaw, Architect
This shows how the tower relieves the whole design and with the corresponding tower across the Square, creates an imposing entrance

MARKET SQUARE, LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT

The rebuilding of Lake Forest was financed by a committee of wealthy residents who subscribed in all about $300,000 which was placed in the hands of trustees. A bond issue was then arranged for and the whole project financed with a view to eventually returning the contribution to the subscribers.

The line drawing shows the plan, which is a hollow square about 200 feet in width and depth. The property on the other side of the alley back of the square was also purchased and streets cut through to the next street. Thus the hollow square has what might be called a rear exit at each of the back corners.

The rest of the square is surrounded by buildings. The plan will show the ingenious method in which monotony was broken up and extra corners devised to give especially good show windows for shop tenants.

It was a very difficult operation to erect these buildings while allowing the existing tenants to do business in their own old ones. A great deal of tact, patience and hard work on the part of the building committee and the architect, however, accomplished this in about a year.

All the stores are now occupied and all are under lease with the exception of three which are being used at a nominal rental by war relief societies.

Photo copyright E. L. Fowler

All the apartments but one on the second floor are occupied, as well as a few offices. Probably 85 per cent of the total is now under lease and the buildings were only completed about six months ago.

Referring to the development of Lake Forest, Illinois, The National Real Estate Journal says:

"One of the most remarkable instances of civic co-operation in a small residential city, leading to important and constructive improvements in the town plan, is the work of the people of Lake Forest.

"In place of the unsightly and unsanitary district formerly constituting the railroad approach to the city of Lake Forest, the architect has produced a charming group of buildings, including 28 stores, 30 apartments, 12 suites of offices, and a commodious gymnasium and club house. The gymnasium for young men and women of the town is practically public property. The streets and parking, which are a feature of the new development, have been dedicated to the city.

"The results of the undertaking, and especially the raising of the half million dollars required for its execution by public subscription, will afford an inspiring object lesson to the people of hundreds of other small communities in America confronted with the same or a similar problem."

"Overseas" With Our Boys

THERE are upward of five thousand American Red Cross workers in France, Belgium, England and Italy today. The variety of service given by these workers to our own soldiers and sailors, or to the armies of the Allies, and to the civilian population would require volumes to describe.

The work in England is chiefly in the camps and hospitals and such emergency work as caring for the survivors of torpedoed ships. Approximately nine million dollars will have been spent in the United Kingdom by the end of this year.

Practically all the American wounded from our divisions brigaded with the British in Flanders are taken to England for treatment. This makes the hospital work in England of the highest importance to America, and the Red Cross is doing everything possible to assist in making these hospitals, as well as the hospitals operated exclusively by the Red Cross, the best in the world. One of the services performed by the Red Cross is locating wounded American soldiers for their relatives and families, and sending news about them back home. More than five thousand volunteer workers, including American and English women, are engaged in this search.

In France, Red Cross activities by the end of this year will have cost seventy-one million dollars. A large proportion of this sum has been used in the civilian relief work, which has won such high praise from the French armies and civilian leaders. Refugees have been fed, clothed and sheltered, children have been saved for the future, and the families of French soldiers have been sustained and encouraged, thereby improving the morale of the fighting forces.

General Petain in a recent letter to Colonel Harvey D. Gibson, general manager of the Red Cross in France, says that the work of the American Red Cross was one of the prime factors in keeping the French army in fighting trim, and he intimates that many French soldiers will be kept under arms for some time yet, so the need of Red Cross service will continue for months after peace is arranged.

The canteen service is keenly appreciated by all the soldiers. American women and girls serve hot drinks, sandwiches, and tobacco at hundreds of camps, railroad junction points, hospitals, and in the principal cities where the soldiers go on leave. It is at the railroad juction points that the American Red Cross makes the most profound impression upon the soldiers, for here the men change trains, and often must wait for hours before continuing their journey, and the canteens furnish a place to bathe, to sleep, read, eat, play games, or chat with the women workers.

Field canteens, operated by men Red Cross workers, are close behind the firing line and give the same service that may be found far in the rear. Millions of men are fed by these rolling canteens, and the cost of this one item runs into the hundreds of thousands of dollars.

The hospital service furnished by the Red Cross in France is chiefly at the base hospitals and in the cities. The field service, near the front, is done by the army nurses, and it is always well to remember that the Red Cross wherever it operates is always supplemental to the Army Medical Corps. For the last half of 1918 the Red Cross appropriation for French hospital service is seven million dollars.

The Red Cross maintains one hospital which was used exclusively for soldiers gassed in battle. Patients of this character require particular attention and have made remarkable progress under the treatment worked

out by American surgeons. Because several kinds of poison gases are used by the enemy, the cases must be treated individually.

An interesting phase of hospital service in modern warfare is the mobile hospital, which is taken from one battlefield to another. Auto trucks carry complete surgical equipment to any part of the front and there are portable kitchens, disinfecting plants and dental ambulances. The dental ambulances have all the latest instruments that may be found in an American dental office.

More than fourteen thousand graduate nurses have been enrolled by the Red Cross in the United States and trained over to the Army and Navy Medical Corps for service in this country and abroad.

In co-operation with the War Department, the Red Cross is assisting the families, relatives and friends of our soldiers and sailors to send each man a Christmas package in a specially designed container. Of course, both the government and the Red Cross would like to have every man receive as much as anybody wanted to send him, but the shortage of space on the ships make it essential to limit the size and number of packages at Christmas.

A new phase of Red Cross service that is growing rapidly is called hospital hut service, for which capable and attractive American girls are being recruited. It will be the duty of these girls to entertain convalescent soldiers. They will read to the men, write letters for them, plan entertainments, and fight the foe of homesickness, which must be vanquished if a speedy recovery is desired. Music plays an especially important part in convalescence, and the Red Cross has provided for this abundantly.

The extent of the co-operation of the Red Cross with the Army Medical Corps may be indicated by the statement that two hundred and thirty-one million surgical dressings have been shipped overseas, and the monthly shipment of sterilized gauze has been one million yards, while ten thousand pounds of ether have been sent monthly. The Red Cross also shipped ten million, six hundred and thirty-seven thousand two hundred and one hospital garments and eight million, two hundred and three thousand one hundred and twenty packages of hospital supplies.

Public interest in the rehabilitation of men disabled in battle has reached a high point. The Red Cross is co-operating with the government in research work, maintaining in New York City an institute for disabled men, where experimental work is done. It is the intention of the government to teach every disabled soldier a trade whereby he can support himself adequately. Men who have lost their legs are being taught stenography, motion picture operating, drafting, printing and many other trades, and those who have lost an arm are being supplied with new inventions which enable them to engage in a great variety of work. Farming is one of the favorite occupations of men disabled in the war. The government will not discharge from the army or navy any crippled man until he has learned to be self-supporting, and it is a notable fact that many of these men are earning more since they were crippled than they earned before the war.

It is to maintain the foregoing and many other forms of service to our fighting men and to their families through home service that the American Red Cross will conduct a Christmas roll call the week of December 16 to 23. What finer message could be cabled to our boys on Christmas Eve than that virtually the entire American people have enrolled in the Red Cross. Such a message also would mean a wonderful inspiration to the civilian populations of Europe because it would show that the American people are no less responsive to the needs of their fellow men in peace than in war. All anybody needs to answer to the Red Cross Christmas roll call is a heart and a dollar.

CONCRETE SHIP FAITH AS SHE APPEARED IN NEW YORK HARBOR.
Photos copyrighted by International Film Service.

VIEW OF THE FAITH, LOOKING FROM BRIDGE TO STERN

This vessel was launched in San Francisco and is the largest concrete ship afloat. She recently arrived in New York with a cargo of sugar from Cuba, in excellent condition, after a very rough voyage.

HULLS AT FITTING-UP BERTHS, AWAITING MACHINERY
MOORE SHIPBUILDING WORKS, OAKLAND

Moore Shipbuilding Plant One of Best Equipped on the Pacific Coast

By FREDERICK JENNINGS

THE development of the Moore Shipbuilding Company properties from the original Moore and Scott plant installation on Oakland Estuary furnishes a fascinating story of perseverance and accomplishment, for today the Moore Shipbuilding plant may be compared favorably with any steel fabricating institution in the United States.

It was an ancient Dutch congregation which one day passed the resolution to build for themselves a new church, to build the new church out of the materials from the old one and to use the old church while the new one was being erected. It was in a somewhat similar predicament that the Moore Shipbuilding Company found itself. The equipment of the plant was good, but it was inadequate for the work in hand. The shops were too small and the erection of new building ways left them rather poorly located, but despite all this, work must progress and the machines in these shops must be utilized to their fullest efficiency, simultaneously with the erection of new structures to house them and the placing of additional equipment throughout the yard.

In short, the Moore Shipbuilding Company's property has been metamorphosed from an ordinary construction and repair yard to a really great shipbuilding establishment, and the fact that during this period of change and growth the plant has stood in the very front rank of shipyards distinguished for their output record speaks volumes for the skill and energy of the management of Oakland's greatest shipbuilding unit.

The firm of Moore and Scott, now the Moore Shipbuilding Company, prior to the present great shipbuilding boom, had been engaged for years in

MOLDING LOFT, MOORE SHIPBUILDING WORKS, OAKLAND

INTERIOR PUNCH SHED, MOORE SHIPBUILDING WORKS, OAKLAND
Leland S. Rosener, C. E.

large ship repair work, many notable jobs having been handled here, and in the construction of moderate sized vessels, such as the Western Pacific ferry "Edward T. Jeffery" and other well known craft. The plant is situated at the foot of Adeline street in Oakland and the available water front has been greatly added to by purchase of adjoining property from time to time. With the acceptance of orders for large freighters, the shops of the concern, while possessing many high-class tools, were found to be inadequate and the plant was entirely remodeled, the old shops being moved or dismantled, as the new ones were erected. Five shipways were installed and a system of stationary tower cranes adopted for handling material about the ways. These cranes consist of a large square frame work tower with a boom on each corner and are so arranged as to reach all parts of a hull on the stocks, the operators being high enough to have a full view of the load and its destination. These cranes, in conjunction with a complete system of broad-gauge railway tracks, make a complete, simple and economical handling system.

Owing to the great amount of work entrusted to this plant, however, the three building ways proved inadequate and two more were added. Even this fell short of the requirements, and upon receiving their recent large order from the United States Shipping Board, the Moore Shipbuilding Company proceeded to install three more building ways, the new structures to be 600 feet in length and able to accommodate such vessels as the large new troop transports which the Shipping Board has ordered and which will be utilized as ocean passenger liners when the boys have been brought home from overseas. This gives the plant facilities for laying down eight large steel steamers at one time.

At the Moore yard, material is brought directly into the plate storage racks by spur tracks connecting with the Southern Pacific and Western Pacific Railway systems and is handled from the cars to storage or to the plate shop by a traveling gantry which directly serves the entire storage space. Alongside of the plate shop is a large open space for assembling bulkheads and other outdoor plate work, and this space is served by a powerful revolving crane with a long arm.

The plate shop and mold loft are well designed and the plant has some excellent records to its credit in the matter of weekly tonnage of material fabricated. The plate shop contains a very fine set of punching machines and also some noteworthy bending rolls, one of these roll sets being 25 feet between bearings and with rolls 28 inches in diameter. Some large flanging presses will also be found which bear witness to the excellent class of work turned out in the Moore shops, these being of the firm's own design and make.

The clerical, timekeeping and managerial forces, draughtsmen and government inspecting forces are housed in a modern, well-lighted office building, attached to which is a large concrete and steel fireproof safe, the upper floor of which is utilized as a tracing storage and file.

A new joiner shop fitted with the highest class woodworking machinery was installed with the first large expansion of the plant, and the powerhouse equipment was greatly added to, especially in the way of new air compressor equipment.

With the recent purchase of water front on which to erect their sixth, seventh and eighth building ways, the Moore Shipbuilding Company secured sufficient land to accommodate a large boiler shop. This shop, which is nearing completion, is 200 by 200 feet, and is being fitted with the heaviest possible boiler-making machinery, the company having accepted contracts for a large number of Scotch marine boilers of the general size and type

PATTERN SHOP, MOORE SHIPBUILDING WORKS, OAKLAND
Leland S. Rosener, C. E.

adopted by the Shipping Board, and which are to be equipped with steam raising units of the Scotch marine type.

One of the interesting developments at the Moore plant was the determination of the Shipping Board to fit out several of the vessels built here as refrigerator ships and this work is now under way; the vessels ostensibly are for the purpose of carrying frozen meats to Europe.

Another interesting feature of the work of the technical staff of the shipyard was the development of the 9,400-ton deadweight ship. This type of hull has met with high approval, and the fact that the extra deadweight capacity over the 7,200-ton deadweight types was secured with the expenditure of a very few tons of steel, speaks volumes for the designing skill of "Benny" Hedstrom and his assistants.

In addition to its Oakland yards and shops, the Moore Shipbuilding Company maintains one of the best equipped machine shops in San Francisco at 678 Second street. The equipment of this shop embodies the results of many years of machine shop experience and is an important adjunct to the plant on the eastern side of San Francisco Bay. A great deal of stationary work, as well as marine engine repair work, is carried on here, and the shop is well known up and down the coast.

Several months ago the directors of the Moore Shipbuilding Company decided that the tremendous amount of work devolving upon Mr. Robert S. Moore made an enlargement of the managerial forces imperative. Some time previous to this, Mr. George Armes, formerly chief engineer of the Union plant of the Bethlehem Shipbuilding Corporation, had entered the services of the Shipping Board, and that body expressing its opinion that Mr. Armes could be even more helpful to his country as the head of a great

shipbuilding concern than as a member of the Shipping Board's construction forces. Mr. Armes consented to join the Moore Shipbuilding Company as president, Mr. Robert Moore becoming chairman of the board of directors. This arrangement served to relieve somewhat the great pressure on Mr. Moore, with the result that the big plant is operating more smoothly than ever.

The Moore Shipbuilding Company has built up a compact, well-arranged shipyard, the management is progressive and improvements are steadily under way; the class of ship and machinery work being turned out is very high, and there is every reason to believe that the company will hold a high place among the shipyards of the country when we begin to take stock of our shipbuilding achievements a few years hence.

* * *

Building Material Prices Likely to Remain at High Level

THAT building material market conditions are no better in European countries than they are in the United States at the present time is shown in a recent commerce report to this Government by Mr. C. W. A. Veditz, commercial attache at Paris, says a writer in the New York Times.

The report also indicates that the present high cost of material will be maintained until supply meets demand. This is also true of the United States, where building costs have mounted to almost a prohibitive figure during the last ten months, with no relief in sight.

The author of the French report opposes the view, sometimes expressed, that the prices of materials may be expected to return to approximately the level of 1914. He states that a simple examination of the underlying causes of present high prices is sufficient to indicate future tendencies.

The increased price for stone and sand, raw materials extracted directly from the soil, is due to the increased cost of labor and of fodder for traction animals.

The increased cost of labor will not disappear, for there have been no examples in the past of an average decrease in wages coinciding with an increased demand for labor. After the war the demand for labor will be urgent and there is likely even to be an increase in various categories of labor. A serious decline in the cost of building materials cannot be expected, so far as labor is concerned, and the same is true of labor throughout the building trades.

The increased price of hay and oats, which has a direct influence upon local transportation costs, can hardly be expected to decline for some time; French peasants will be unable to count upon the same aid from their children that they obtained before the war, and agricultural crops will therefore cost more to produce and will sell at higher prices.

It may, therefore, be concluded that the price of building materials cannot decline, because the causes that have contributed to the existing increase will continue to be operative and may be even more intense than before.

With regard to wood, it should be noted that French forests have been subjected to an unusually intensive and often uneconomical exploitation, and that the abnormal consumption caused by the large-scale construction of barracks and provisional edifices will leave a deficit in the supply. It will take many years to overcome the deforestation that has gone on dur-

ing the war. As for the use of wood from the French colonies, the Government is preparing a law to facilitate the importation of such woods, but the cost of transportation and the increased cost of labor will very probably result in bringing the price of this wood to a level that will exceed by at least one-third the prices prevailing in 1914. Wood from Sweden and Norway, the price of which is exceedingly high, will be demanded throughout Europe, and cannot be furnished in sufficient quantities.

Even though, in spite of these factors, there should be a reduction in the price of lumber, the abnormally high price of labor will more than offset any such possibilities, and the price of building timbers, even though it may be somewhat less than the present prices, will in any event be considerably higher than in 1914.

Steel and other metals will probably be obtainable at lower prices now that the manufacture of munitions of war has ceased, but the price level will not reach the figure of 1914, particularly because of the increased cost of labor.

In the manufacture of builders' hardware the cost of labor is much more important than the cost of raw materials, and the reduction in materials will have little or no effect upon builders' hardware, locksmiths' wares and the like.

Tiles, bricks and all articles of pottery in general will undergo the same influences as stone and sand; any difference in favor of these products will be attributable only to a reduction in the cost of coal; but the reduced price of coal will follow slowly upon the cessation of hostilities, for the principal French mines, greatly damaged by the enemy, will require considerable time to resume operation upon a basis approaching that of 1914; moreover, new workshops and manufactories, which will be established throughout France, will require coal, and the probably increased demands will tend to postpone any important decline in prices.

Summing up the facts to which he calls attention, the author of the article predicts that the cost of building in France will probably be maintained at nearly the present level, with not more than 5 or 10 per cent difference, largely because the relative importance of primary materials entering into construction work is too small as compared with the cost of labor—both the labor that makes the materials and the labor that builds.

The reconstruction of the invaded and devastated regions, and the repair of buildings, whose upkeep has been neglected during more than three years of war, will lead to demands for building materials and building activities far in excess of the available means for their accomplishment.

* * *

A Million Dollar Tale

Mr. Charles M. Schwab puts a high price on his choicest story. The Director General has a large assortment of good stories, but the one which perhaps has been received with greatest hilarity and joy by hundreds of thousands who have heard him speak in the last few months is that relating to the cowboy who took the duchess out to dinner. At the Liberty Loan rally in New York the other day, Mr. Schwab announced that if $1,000,000 more were subscribed he would tell a story. The million was promptly forthcoming—and Mr. Schwab told the duchess story.

It probably is the shortest story ever sold for $1,000,000, but there were many in the audience who declared it was worth the price. A vast majority of the shipworkers have heard this story and many more probably are destined to hear it. It is too expensive a tale to publish.—Emergency Fleet News.

Design Features of Concrete Ships

ESSENTIAL facts on the design of the concrete ship developed by the Department of Concrete Ship Construction of the U. S. Shipping Board are given by Mr. R. J. Wigg, Chief Engineer of the Department, in a U. S. Senate Document, from which the following matter is taken:

The vessel contemplated is of the same size, dimensions, and form as the 3,500-ton standard wood ship, except that the sheer line amidships has been slightly altered and no outer keel is fitted.

The general arrangement follows closely that of the above wood ship, including the number and location of bulkheads.

The propelling machinery designed for the wood ship has been provided for without essential change in this vessel.

The principal characteristics follow:

Length (P. P.), 268 feet.
Beam over shell, 46 feet.
Depth amidships (at side), 28 feet 3 inches.
Draft, 23 feet 6 inches.
Full load displacement, 6,175 tons.

Comparative Weights, Concrete, Wood and Steel Vessels.

	Concrete.	Wood.	Steel.
Hull	2,500	2,300	1,160
Fittings, outfit and equipment	191	191	180
Propelling machinery	206	206	200
Margin	75	80	60
Ship (light)	2,972	2,777	1,600
Reserve feed	80	80	80
Ordnance	23	23	23
Fuel	300	300	300
Stores	40	40	40
Cargo	2,760	2,180	3,057
Total dead-weight	3,203	3,123	3,500
Full load displacement	6,175	5,900	5,100
Percentage dead-weight to full load displacement	52	53	68.6

Values of Metacentric Height, Stability, Period of Roll.

Metacentric Height.—The metacentric heights in the light (ship without cargo) and full load conditions are, respectively, 2.15 ft. and 2.2 ft. The best practice at the present time places these values between the limits of 1 and 3 ft. for vessels of this type and size. It will accordingly be noted that in this respect the vessel in question appears to be entirely satisfactory.

Range of Stability, Righting Arm, etc.—The maximum righting arm occurs at 51.5 degrees and 46.5 degrees for the vessel light and fully loaded, respectively, the extreme ranges being 89 degrees and 81.5 degrees, respectively.

Freeboard.—The freeboard amidships at side is 4 ft. 9 in. It is understood this is satisfactory to the representatives of Lloyd's Register of Shipping.

Period of Roll.—An attempt to investigate this theoretically is a laborious operation and of doubtful value. It is seldom attempted in the design of steel vessels. It is considered safe to say, however, that the concentration of relatively great weight in the decks and shell, as is the case in the concrete vessel, should aid materially in increasing the period of roll anticipated.

Girder Strength or Strength of Vessel as a Whole.

The strength of the ship as a girder supported on the crest of a wave amidships, hogging and also on the crests of two waves, one at each end, sagging, was calculated for five conditions.

The same basic assumption as to length, depth, and form of wave and the same method of procedure that is standard practice in calculating the strength of steel ships was followed throughout.

Condition—	Maximum bending moment	Max. tons per sq. in. fiber stress in		Lb. per sq. in. fibre stress in concrete.
		Deck reinforcement.	Keel reinforcement.	
Ship without cargo, hogging..	25,175	5.53	[1]2.80	728
Ship fully loaded, hogging....	37,000	5.63	[1]2.95	766
Ship without cargo, sagging..	14,400	1.28	[2]2.63	270
Ship light with enough cargo in forward hole to trim sagging	11,960	1.07	[2]2.19	210
Ship fully loaded, sagging....	9,400	.84	[2]1.72	70

[1]Keel. [2]Deck.

Good practice in steel merchant ships for a boat of this type gives a maximum stress in the outer fiber of from 5 to 8 tons per square inch, figured on the same basis as given above for the concrete ship. In addition to the stress due to the ship acting as a girder, there is local stress between frames where the plating must act as a beam over that space. This action is seldom taken account of in steel ships, but has been given full consideration in the design of the 268-ft. concrete ship.

Local Strength, or Strength of Individual Members Compressing Vessel Structure.

Transverse Strength.—Only in the case of naval vessels is it the practice to go into the transverse strength with any degree of accuracy. Either the sizes of frames are taken from the books of the classification societies, or the frames are figured as beams supported or fixed at keel, bilge, or deck, as the case may be. The complete ring in the concrete boat is figured with numerous cases of loading and keeling for every frame.

The strength of the transverse frames for the vessel was investigated for a large number of conditions of loading and for various immersions of the vessel. The transverse frames are designed to stand the outside water pressure with water to the gunwales and with minimum cargo load, for maximum cargo load and a sagging draft of 15 ft. 6 in., and for listed positions with loading slight and heavy; all of these conditions of loading to be met by the frames with stresses not to exceed 1,500 lbs. per square inch in the steel. The results of the analysis agree with those of Dr. Bruhn, published in Transactions of the Institute of Naval Architects, 1901 and 1904. It is important to note from Dr. Bruhn's analysis it is clear that the design of the concrete frame is so made that the frame is working at the above-noted safe stresses under loadings that would develop double the steel stress in a standard steel frame of similar dimensions. In steel ships this local action between frames would increase the stress in the bottom plating of the ship acting as a girder from 5 to 10 tons, and in many cases to a much higher figure.

In this concrete-ship design the tensile stress in the reinforcement, due to the local bending, amounts to about 3 tons per square foot, bringing the total up to slightly less than 8 tons.

Bulkheads.—The bulkheads have been designed to carry a head of water on either side up to the deck. The collision bulkheads, fore and aft, were designed for 1,500 lbs. per square inch in the concrete, and 16,000 lbs. per square inch in the steel. The steel stress in the engine-room bulkheads was advanced to 20,000 lbs. per square inch.

In the design of bulkheads for steel ships it is common practice to allow a unit stress in the steel of 22,000 to 23,000 lbs. per square inch.

* * *

How They Do It in Canada

TO alleviate housing conditions in Toronto and other parts of the province of Ontario, the government, according to a scheme announced by Sir William Hearst, premier of Ontario, in a letter to Sir John Willison, chairman of the Provincial Housing Committee, "will introduce at the next session of the legislature whatever legislation may be necessary to carry into effect a suggested project to lend the sum of $2,000,000 at the rate of 5 per cent, to corporations or private builders, to construct houses for workingmen, and to ratify any by-laws or proceedings properly taken by municipalities in the meantime, with a view to taking advantage of the proposed plan," states a correspondent of The Christian Science Monitor. "I want it clearly understood," the letter further says, "that the scheme I have suggested is only intended as a temporary one, to assist in meeting the pressing emergency with which we are confronted, and must not be considered as an admission of responsibility on the part of the province, or in any way relieving the federal government, municipalities, employers of labor, and citizens generally, from whatever obligations may rest upon them to provide a satisfactory solution of the whole question. The object of the government is merely to lend some assistance, regardless of where responsibility rests, with the hope of stimulating effort on the part of all concerned."

The offer suggested extends to rural as well as urban municipalities, it being "the government's desire to assist in the erection of proper homes for farm labor, either on the farms or in suitably located communities."

The terms are that the total amount loaned by the province shall not exceed $2,000,000; any municipality receiving a loan from the government must add at least 25 per cent to the amount received, so that for every $1,000 received at least $1,250 shall be expended in house construction; the rate of interest shall be 5 per cent; the types of houses to be constructed shall not exceed in cost $2,500 each, these to be offered to working men and women on easy terms of payment; where house and land are rented, the charge shall not exceed $25 per month; the building scheme of each municipality including the plotting of the ground, plan of houses, form of construction, location of the land to be developed, shall be approved by the government; period of loans shall not exceed 20 years.

* * *

Too Common Then

Architect—I don't suppose that there ever was a woman who wasn't delighted at the idea of having a house of Colonial architecture.

Husband—Unless maybe it was some woman during the Colonial period.—Building Age.

The Function of the Architect in Building

AS WE have frequently stated, it is a peculiar circumstance that there are so very many cases where disputes arise between the owner of a building being erected and his architect. These disputes are generally so serious that it is frequently stated that only in rare cases is the same architect employed a second time by the same building owner. There is surely something wrong here—either with the architect or the owner. What is it?

It has been suggested that the owner expects too much from his architect—and certainly he sometimes seems to expect more than he gets. On the other side it is held that the architect assumes responsibilities and then fails to take care of them, either through inability, carelessness, or fear of antagonizing the contractor. In either case the trouble appears to be in a lack of definition of the architect's duties. No two architects give the same amount of service; no two owners agree as to the amount of service to expect. Could not the duties of the architect be clearly defined? If he is merely a designer, let it be so understood. If he is also a supervisor of construction, define his duties clearly. The words "inspection" and "supervision" are open to legion individual interpretations.

The architect, as we see it, is primarily the professional adviser of his client, as well as the designer of his building, and even when the contract has been signed, the architect may still remain the official interpreter of its conditions and judge of its fulfilment. Under present conditions the architect almost invariably assumes the responsibility of inspection, and this is the rock on which nearly all friendly relations between architect and owner founder. As a matter of fact, except on the very small jobs, the owner finds it to his interest to employ his own inspector. This, of course, is an injustice to the owner, who is thus paying twice for the same services.

Looked at broadly, the erection of a building seems to divide itself into three separate operations. There is, first, the design of the building, internally and externally—this is plainly the work of the architect; there is next the determination of the materials to be used, their size and strength, type of construction and so on—this is the work of the engineer, requiring knowledge rarely found in the architect, and so quite outside his field; then, third, there is the erection of the building according to the engineer's figures—the work of the contractor.

Whether the work of the contractor, or contractors, in erecting the building should be supervised is a matter, surely, resting entirely with the owner. Most owners will prefer to employ an independent supervisor. In other cases they may have such confidence in their contractors that they will not consider this necessary. The main point, however, is that it should be clearly understood that this responsibility rests with the owner. The architect has no right to assume it, because it is a responsibility he cannot fulfil, and the engineer has no right to assume it, unless he is in a position to give his whole time to the work.

It would appear that if the status of the various parties entering into the erection of the building were thus clearly defined, and understood by the owner, there would be much less dissatisfaction and much better erected buildings.—Contract Record.

The Building Outlook

THAT the entire country is about to enter upon an unprecedented era of building activity is indicated in reports from the big cities of the East and on the Pacific Coast. It is not generally realized that the building industry of this country which was so seriously disorganized by the War, represents an investment of something over $2,000,000,000, while its annual product in normal times is conservatively estimated at more than $3,000,000,000. Employment is given in ordinary times to a million and a half skilled and unskilled workmen. There are in normal times three thousand architects engaged in design and superintendence in the United States.

There is no question about the future prosperity of this great industry. The demand for new building is here. Every architect, every engineer, actively practicing their profession, can tell of the many projects that have been reluctantly postponed because, in the first place, of patriotic consideration, and second, because of the restrictions that have been imposed by the Government. This construction work includes a great and increasing volume of public work for which bonds have been authorized, and in many cases for which the money is actually in hand. Now that the ban has been removed these projects can be carried out unhampered.

Of course, it is entirely reasonable to believe that for the first few weeks there will be some hesitation on the part of owners, who may think that by waiting awhile they can get better prices on materials and labor. But material and labor prices will quickly settle upon a fairly normal basis. The period of readjustment ought not to take more than a few weeks, even though present priority restrictions are removed. It does not seem at all probable that with the markets swept clean of materials, and a big construction program awaiting just around the corner, there is any good reason to think that material prices will be reduced very considerably below the present point for a long time to come—if ever. Surely, labor will not easily relinquish the advances that have come in the last four years of war. A scarcity of common labor will, we believe, be pronounced for a long way ahead. The nations of Europe will take restrictive measures to stop emigration—if, indeed, there is any tendency to emigration on the part of the workers, for Europe has a vast program of rehabilitation to carry out before it can repair the ravages of more than four years of bitter warfare, and its workers, who will not have to bear in considerable part the direct burden of taxation, will undoubtedly find plenty of labor at hand with a rate of renumeration passing all precedents.

Indeed, the owner who now places his plans in the hands of the contractors will profit very considerably, for the old, old story will surely repeat itself. Contractors who have had scanty gleaning at the best during the past few years, or who have drifted into essential war work of one kind or another, and who are hastening to re-establish themselves in their old field, will be anxious to get actually into the field with a job or two, which will enable them to build up their working organizations. They will want to be in a position to offer steady employment to the tried and reliable employees of former years, who have formed the nucleus of their field and office forces. Hence, they will be willing, in many instances, to sacrifice initial profits to this desire, and the owners who place their contracts now will benefit.

There are a good many other things to be considered. For the next year or so there will be a big job of policing to be done in Europe. America

will probably share in this work. Announcement has been made that the entire American army can be transported home in three months, but it is not probable that any attempt will be made to do so. Some of the troops —the greater number, undoubtedly,—will be brought home and mustered out of service, but hundreds of thousands of men will be still engaged in the military and naval forces of the country after the lapse of many months —perhaps of a year. That will have a natural tendency to reduce the men available for work at home, and will have a tendency to keep labor prices up—though it must be said that in all likelihood wages will never go back to anywhere near as low a point as they were four years ago.

There already are signs of a big demand for residence construction. Some four million young men will no longer be housed in cantonments and army camps. They will require homes of their own as they are again absorbed into the industrial life of the country. This will particularly affect the Pacific Coast, where there has been comparatively little manufacture of war supplies, and where, with a few exceptions, there has been very little dwelling construction during the past four years.

Future prices of building materials are, of course, dependent largely upon the Government's attitude. It will not be so easy for the Government to relinquish control of the the railroads, and it appears extremely unlikely that in any event freight rates will be reduced very considerably, if at all, until the railroads are established on a sound financial footing, with enough trackage and equipment to meet the demands of the expanding industries of the country.

Building Forcast for 1919 in San Francisco and Bay Cities

THIRTY million dollars is a conservative estimate of the probable cost of new building construction in San Francisco and the Bay cities in 1919. This sum includes the $3,500,000 which the city of San Francisco expects to spend, if bonds are sold, for new school houses and $1,000,000 for a new State Building in the Civic Center. The city of Oakland will spend a million or more for schools and further public work in the latter city will include a $250,000 Receiving Hospital, authorized by the County Supervisors, and a monumental bandstand in Lakeside Park.

New bank buildings are promised by the Anglo London Paris National Bank, the Bank of Italy and the Federal Reserve Bank. The cost of these three structures will probably not be less than $3,000,000. Several office buildings of skyscraper proportions are contemplated, including a ten-story structure in lower Market street for the Matson Navigation Company and a four-story addition to the eight-story Elkan Gunst Building at Geary and Powell streets. A number of large warehouses are also projected and there will be the usual demand for manufacturing plants and loft buildings. In the list of buildings of a public character the most important probably will be a memorial to the soldiers who fought in the late world war. The cost of this structure will depend upon decision of the community and the extent of the contributions. Still another public edifice will be an Aquarium in Golden Gate Park which is to be built from a $250,000 bequest of the late I. Steinhart.

Hospital construction will be much in evidence. Additional buildings for the U. S. Marine Hospital at the San Francisco Presidio are already under way. Further additions to the Letterman Hospital are planned. Some changes are to be made to the State University Hospital on Parnassus avenue. A tubercular hospital is planned for the City and County

of San Francisco, while down the peninsula, San Mateo County is to spend several hundred thousand dollars for a new infirmary. Additions to the Masonic Home Hospital at Decoto are to be started early in the new year. It is very probable that the Providence Hospital in Oakland which contemplated building a new home before the United States entered the war, will see its way clear to build the coming year.

Although San Francisco and the Bay cities are already well supplied with theatres and amusement halls, there will nevertheless be some new construction work of this character. A large moving picture theatre is planned for the Mission District and the Techau Tavern interests have announced plans for a new cafe to be fitted up in the present St. Francis Theatre on Geary street. Construction of an immense bicycle racing track is contemplated at Van Ness avenue and Hayes street. In Oakland a large dancing pavilion, similar to the Arcadia in San Francisco, is proposed.

The state harbor commission will build additional wharves, piers, sheds, etc., along the San Francisco water front, and the Islais Creek improvements will be continued. A group of warehouses is planned. The total cost of new harbor work is estimated at $3,000,000.

On pages 117-18-19 will be found a summary of some of the projected work in architects' offices.

Many Municipal Buildings Promised for San Francisco in 1919

Following is a copy of a special report by Mr. John Reid, Jr., of the San Francisco Bureau of Architecture, covering permanent building needs for next year:

The after-war reconstruction period finds San Francisco with a lengthy programme of needed public building construction. With the sale of three and one-half million dollars worth of school bonds and the annual budget appropriations to the municipal departments for their building requirements, it will make it possible to begin active construction of some of the following building projects:

A start has already been made to construct the schools provided for in the recent three and one-half million dollar bond issue. Contracts have been let for the complete construction of the Monroe School, Excelsior avenue and Lisbon street, at a total cost of $186,650; the land has been acquired and in all about $200,000 of liabilities have been incurred against the bond issue.

Plans are being prepared for some of the other schools, and the Richmond school, Eighteenth avenue and Cabrillo street, will be started next at an estimated cost of $140,000.

The Hillcrest school is nearing completion at Cambridge and Silliman streets. The cost of its construction, with the six-room Twin Peaks school, upon which work is to start in the near future at Corbett road and Copper avenue, has been provided in this year's budget appropriation.

Many districts of the city are badly in need of school facilities. The bond issue provided for twenty-three new buildings containing one hundred and eighty-eight class rooms as follows: Ten new school houses, ten additions to present schools, one new high school, and additions to two high schools. This will not meet the requirements of the rapid growth of the city, and it is expected that at least two additional new school houses will be provided in the annual budget each year.

The main group at the San Francisco Hospital has been completed; the Isolation and Tubercular buildings were finished this year. This, however, does not complete the buildings required by the Health Department.

The old temporary wooden buildings at the Relief Home have about reached the limit of their usefulness and it is planned to construct the new permanent group on the unit plan; one wing or unit each year.

One emergency hospital is still in rented quarters. A new building will be constructed for it.

At the San Francisco Hospital a chapel is to be constrcted in connection with the Tubercular building and an auto shelter is to be erected at the Mission Emergency Hospital. A Tubercular hospital is to be erected in the country.

The administrative and executive offices of the Board of Health are in rented quarters. It is planned to house them in a new building at the Civic Center to be erected adjacent to the Central Emergency Hospital, southwest corner Grove and Polk streets, this building to harmonize with the other Civic Center structures and to fill in the frontage between the City Hall and the Auditorium.

Two temporary wooden fire houses constructed after the fire of 1906 remain within the fire limits. A Fire and Police Department building is to be erected at the northwest corner of Polk and McAllister streets in harmony with the Civic Center buildings and filling in the frontage between the City Hall and the proposed State Building. This building will house the fire apparatus in the temporary structure at present occupying a part of the site, with the executive and administrative offices and meeting room of the Board of Fire Commissioners, together with the district police station, which is now housed in the temporary wooden building on Bush street, between Polk street and Van Ness avenue.

Possibly two branch libraries will be constructed and improvements made in the recently acquired play grounds.

The construction of additional Civic Center buildings may be undertaken on the land already acquired by the city. An opera house, museum, University extension building, and other structures have been discussed.

The State Building will in all probability be erected.

* * *

The Outlook in Los Angeles

By W. E. PRINE

PROSPECTS for building operations in Los Angeles and vicinity during the year 1919 are most favorable. Many large building projects were in contemplation when the war interrupted construction activities. Just how many of these will be revived and take definite form depends on the rapidity of the post-war readjustment and return to normal business conditions. Public work con be counted upon more definitely than private work. Los Angeles county contemplates the erection of a new county jail, a new office building at New High and Temple streets, additional buildings at Juvenile Hall and a building to be known as the Children's hospital for the care of orphans and indigent children. Los Angeles city will be asked to vote on the issuance of $4,500,000 bonds for harbor improvements which will include the construction of wharves, warehouses and other structures. The city will probably also erect a war memorial, the definite form of which has not been determined.

The City Planning Association is advocating the erection of a large civic building to provide a headquarters and meeting place for community welfare organizations. The J. E. Carr mercantile building, J. C. Austin, architect, on South Broadway will be started about May 1, next. This will be a five-story reinforced concrete structure to cost about $250,000. Mr. Alexander Pantages

will build his new theatre at Seventh and Hill streets during the coming year. Mr. Marcus Pretica, of Seattle, is the architect.

Plans are now being prepared for a structure to cost in excess of $500,000. Several large hotel projects are in contemplation but none of these are in a definite stage. One or more of them will probably materialize, however, during 1919. A number of large warehouse and factory building projects pending before the war will be revived as soon as business conditions warrant. Residence building will go forward on an extensive scale, as there is a shortage of houses.

* * *

Suggestions for Strengthening Institute Relations

SOME months ago Mr. John Bakewell, then president of the San Francisco Chapter, American Institute of Architects, appointed a committee on Institute Relations consisting of Mr. John Galen Howard, chairman, and Messrs Clarence R. Ward, William Mooser, Ernest Coxhead and J. W. Dolliver. This committee, made up of five highly esteemed members of the profession, held a number of meetings and finally agreed upon a unique report which, if accepted by the Chapter in the same liberal spirit that it was framed, should materially improve the conditions and put an end to the tendency of members to absent themselves from gatherings, both business and social, of the local Chapter.

The report goes on to say:

"The individualism which is so typical a characteristic of the architect, makes architectural organizations everywhere difficult to hold together. Meetings are apt to be perfunctory, sparsely attended, and attended by different haphazard groups at successive meetings, so that continuity and enthusiasm of effort in any line are difficult to establish and maintain. Only occasionally, when some great event of general interest comes up, the clans gather, and often with the result rather of factional division and destruction of intimacy and mutual confidence than of increased solidarity. A large part of the reason why we don't see more of each other is that we don't see enough of each other—paradoxical as the statement may seem. We don't understand each other because we are not intimate enough, and we are not intimate enough because we don't understand each other well enough to draw considerable attendance to meetings. When we meet about something in which we are all interested enough to take sides, half the time we waste the opportunity for a frank and intimate discussion by mutual recrimination and vituperation. The result is that when one of us runs against a snag in his personal experience, the last thing to occur to him would be to take the Chapter of even his fellow architects into his confidence. In the same way when the Chapter has difficulties, it is jealous of its prerogative to settle the matter as a Chapter affair, rather than take it up freely with the Institute. All this means nothing more nor less than distrust. Distrust constitutes not only a present fault, but a threatened danger. It is due in some measure, if not almost entirely, to an over-disposition toward self-seeking. Of course, everybody wants a job when he hasn't one, and wants to keep it when he has. But in the long run the best way to get jobs and the best way to keep them is to build up the solidarity of the profession to such a point that clients recognize the architect's claim, and that the profession itself protects the job once got. Such confidence as is necessary to the well-being of our mutual

individual relations and relations to the organization can be built up only by a determined effort on the part of our whole membership.

"What are the threatened dangers? First of all, growing isolation, leading to schism, and that to a sure loss of prestige, opportunity, usefulness. And these are not merely problematic dangers; they are evils which are automatically to be expected and unavoidable as the result of our existing faults. These faults and automatically threatening evils can be ameliorated first of all, and all inclusively, by greater intimacy and goodwill. Our meetings ought to be interesting and well attended. They ought to be, excepting as to the actual transacting of business, more informal, with more opportunity of friendly interchange and conversation. It is difficult to cultivate the sort of feeling we want in the places where we usually meet. A great effort should be made to find some pleasant, perhaps very rough, simple old place, where we could be quiet and intimate, instead of where the air rings with seductive suggestions of the peroxide blonde. No one wants to stop and talk architecture when he might be sitting in a cosy-corner with cosy company or tripping the light fantastic just outside the door. We eat more than is necessary at our dinners and pay more than we want to for having too much. However, it is not this Committee's business to say how our meetings are to be conducted. There is a Committee on Entertainment that is well able to look after that end for itself. We merely wish to point out that we want more attendance, and we want more intimacy among those who attend.

"This refers to our Chapter meetings. But we want to get more in touch with the Institute. It ought to become a fixed custom for representative men of the Institute to visit us. When an Institute Convention is held, we ought to make sure that a full delegation from this Chapter attends. By a mutual mixing like this we would come in a very short time to understand each other and our national problems better than by years of correspondence—though we need the correspondence, too. How can the Institute expect us to understand what is going on merely by reading the Journal and sending a delegation of two or three, or three or four members once a year to a Convention three thousand miles away? Year by year, every member of every Chapter ought to have the opportunity to become acquainted with the officers of the Institute, and that can be brought about only by the officers visiting every Chapter. This seems a large undertaking. Of course it is. But nothing short of that is going to do what must be done if our profession in this country is to be properly vitalized and fitted for the tasks that are before it. When you bring the matter down to cold planning, it would not be so difficult to carry out. The expense, while it might be rather heavy, is a necessary one, and we are surely not so poor as to be unable to afford to keep going When a Convention occurs, we ought to send a delegation of the full size to which we are entitled. When we have once established relations as we want them or approximately so, and perhaps before, and with a view to establishing them, we ought to extend our relations and our influence beyond the limits of the Chapter or of the Institute, and hitch up with other Chapters; those nearer-by first—those a little farther-off later; and with other organizations whose purposes are more or less like our own, looking to public service. It is only by solidarity and by vigorous extension of influence that we can succeed in doing what is necessary to do if we are to live as a profession.

An Investigation of Concrete Houses

AN idea of how some concrete houses are regarded by the occupants is given by Milton Dana Morrill, architect, N. Y. C., in a report of his own personal investigation. The inquiry was made prior to a housing enterprise on which Mr. Morrill is now engaged. The group to which Mr. Morrill refers in the portion of his report here quoted was erected under his own direction.

Nov. 30-Dec. 1, 1917.

At Nanticoke, Pa., I inspected a group of forty reinforced concrete dwellings. These have been occupied for the last four years. The houses contain seven rooms, with outside toilet. No electric or gas lighting. The houses are piped for cold water only. The monthly rental is now $10. The older residents of the group still get their houses for $8, which was the established rental of four years ago. These houses have solid concrete walls, concrete floors, partitions, stairs, and flat concrete roofs. The only woodwork is for windows and doors and their frames. The entire structures are of cinder concrete. Steel forms were used throughout the building operation; the marks of these forms show plainly inside and outside the houses, as no plaster or other finish has been applied, the concrete being painted only—except on six of the forty dwellings, where the interior was finished with a skim white coat of plaster. These form marks give to the work a rough and unfinished appearance, both inside and out. From a structural standpoint, the houses seem to be standing well, with no repairs except a coat of paint, since they were completed. The permanency of this construction for industrial houses is here clearly demonstrated, although the finish here given is too crude for the better class of industrial dwelling.

The renter is not particularly interested in the permanency of the house construction; neither does he give any particular value to the fireproof or sanitary quality of his house.

In order to get the tenants' viewpoint after living in these houses for several years, a list of questions was compiled and put to fifteen different families in the group.

The questions asked were as follows:

1. How long have you lived in this house?
2. Have you ever seen any dampness in the house?
3. Do you find your house comfortable, warm in winter, cool in summer?
4. How many stoves do you have?
5. How much coal do you burn per month?
6. Do you like the casement or swinging windows?
7. Do you like the combination, bathtub and washtubs installed in the kitchen?
8. What covering do you use on the concrete floors?
9. Do you find the floors cold or hard to the feet?

These questions, together with observation, brought out the following facts:

Each 7-room dwelling was heated by the kitchen range and one large stove in the living room requiring on an average of one ton of coal per month. All the families found the combination washtubs and bathtub a convenient and a useful fixture. Practically all the families would prefer the usual sliding windows instead of those with casement or swinging sash. In all the houses inspected the concrete floors were covered with rugs, in the living rooms, and with linoleum in the kitchens. In some of the answers given there was some variation, so it may be helpful to give these answers in detail. For identification the facts brought out by the tenants have been put down under the house number where each inquiry was made.

Dwelling No. 303—4 years' occupancy. No dampness, but walls sweat on wash day. House very cool in summer.

No. 309—4 years' occupancy. No dampness. Concrete floors found hard on the feet.

No. 325—3 years' occupancy. Walls sweat on wash day. Rather have wood floors to live on.

No. 315—Had just been vacated and was being washed out before arrival of new tenant. The floors were being flushed with soap and water and scrubbed with a broom. A dwelling of this construction can be cleaned very thoroughly. There are no concealed spaces in the construction to harbor vermin or insects.

No. 326—No dampness found. House found warm in winter, cool in summer.

No. 936—4 years' occupancy. No dampness found. Concrete floors not found cold, but would prefer wood covering.

No. 939—4 years' occupancy. Would prefer wood floors.

No. 921—4 years' occupancy. No dampness found. Even temperature, cool in summer and warm in winter.

No. 923—No dampness observed. Construction preferred having wood floors. Cement floors not found cold, but wood floors preferred—"easier to fasten carpets down."

No. 924—No dampness found, but concrete floor found hard.

No. 934—Walls sweat on wash day. Finds house warm in winter, very cool in summer. States that did not like concrete floors at first, now finds them O. K.

No. 327—1 year occupancy. No dampness found. Casement windows preferred. More air in summer. Wood floors preferred.

No. 333—Occupancy 1 year and 3 months. Cellar found damp. Finds house cool in summer, about like wood house in winter.

In the six dwellings where the walls were finished with a skim coat of white plaster directly over the concrete walls, this has given considerable trouble. Steam from washing has loosened this thin plaster coat, and much of it has had to be replaced.

This investigation of these concrete houses would seem to show that cinder or slag concrete, when properly made and reinforced, is a satisfactory construction for the walls of dwellings. It would further show that it is necessary to furr such concrete walls if sweating is to be eliminated. The investigation further shows that to get an attractive and permanent exterior finish these concrete walls should have a stucco finish.

While the concrete floor has many advantages from a permanent fireproof and sanitary point of view, this investigation shows clearly that the tenants much prefer a dwelling with the usual wooden floors.

The permanency of this construction is at once apparent. These houses will require an occasional coat of paint and the doors and windows might after many years have to be rep'aced, but otherwise there seems to be no reason why these houses should not be as good in fifty or even 100 years as they are today.

These houses were designed and built to accommodate the families of the average mine laborer, whereas from the inquiry made they are occupied to a large extent by the families of the mine foremen. These men receive higher wages and could afford to rent and would gladly occupy better finished houses, with modern conveniences, such as electric lights, bathroom and furnace heat, if such houses were available close to their work.

* * *

Concrete for Industrial Housing

"CONCRETE houses fit in admirably with any landscape scheme," says the Portland Cement Association in a bulletin on "Concrete for Industrial Housing." Continuing, the bulletin says: "Good exterior appearance depends only upon architectural design and workmanship. Fireproof concrete houses help to reduce the cost of living. Insurance costs are lowered. Where industrial communities are developed with concrete improvements throughout, the neighborhood assumes a truly permanent aspect. Concrete streets and alleys insure easy access for fire departments. Concrete paving, front and back, makes utmost cleanliness of surroundings possible.

"Cost of keeping concrete-improved communities clean is considerably lower than that required for the unpaved, poorly-built district. Peace of mind is a valuable return secured from permanent, fireproof, concrete improvements. It cannot be reduced to dollars and cents but most certainly increases the earning capacity of individuals.

"There is not an instance where industrial housing has been worked out with particular reference to the comforts of those most interested—the workers—that their self-respect and general efficiency have not greatly improved. Today the inducement of high wages without attractive home surroundings will not foster contentment in the workingman with his position. No matter how dirty his work may be, he wants to keep himself and his home surroundings clean. He has learned to appreciate and value attractive, comfortable, modern, sanitary quarters. He, as well as his em-

ployers, realize that these are conducive not only to his personal efficiency but to his health and general welfare. The concrete house makes these ends attainable.

"For the untrained, ignorant foreign laborer who has not learned the value of these things, the concrete house is still the solution. He is exceptionally difficult to provide for because by habit due to lack of proper environment he is likely to be uncleanly and destructive in the use of whatever home he may occupy. He cannot afford to pay much rent so the housing provided for him must consider a type of construction which is of low upkeep. He must be housed in a home that will provide for his general welfare as regards sanitary appointments and comfort, and also in one that will withstand the general abuse to which in his ignorance he may subject it.

"Several distinct types or systems of construction have been developed for building concrete houses. Briefly these are as follows:

"1. Walls, partitions, floors and roofs of monolithic concrete construction, reinforced where and as necessary. Such houses are built by depositing the concrete mixture into previously erected forms of wood or metal.

"2. So-called unit systems, which mean that slabs constituting walls and partitions, also columns and beams, are manufactured or precast at a place or in a plant arranged for the purpose, and after the units have been properly hardened they are brought to the building site and set in place in a very short time and at small expense. Walls, partitions, floors and roofs may be solid or hollow.

"3. Walls of concrete block or similar units, with partitions, floors and roof as in the preceding system. Walls, partitions, floors and roofs may be solid or hollow.

"4. A metal frame, resembling that used in a house built of wood, to which metal lath or fabric is fastened and the exterior covered with portland cement stucco. Metal lath is also attached to this frame on the interior, which is plastered with ordinary plaster. Partitions may be of metal frame and lath, like the exterior walls, or of hollow cement tile or other fireproof partition material. Floors and roofs may be solid slabs of reinforced concrete or may have metal joists, covered by thin reinforced concrete slabs. Metal lath is attached underneath the joists, then plastered.

"Hollow walls in concrete houses, regardless of how they may be secured, are quite desirable, since the air space so produced protects the interior of the house against sudden or extreme changes in outside temperature—contribute to keeping the house cool in summer and make it easier to heat in winter."

* * *

Dawn of a New Era in Building

By C. H. WHITE

WE PAUSE at the threshold of a new era. Now that the armistice is signed, the hungry Hun on his knees trying to beg off, and the terrible scourge of war which has racked the world for four years removed, a lull has settled over business which, indeed, is very welcome to strained nerves.

During the war, however, a pace has been set which when directed to our natural peace time industries will move them forward with an energy and a hum unequalled heretofore. The transition from war work to normal fields of endeavor, especially in factories which have been devoted to producing war requirements, will be quickly accomplished in true American

style and peace time demands for hardwoods will take the place of war time demands.

At the start of the new year, possibly before, we can look for the building industry to come again into its own and to proceed with unprecedented vigor and activity.

The Pacific Coast builders are to be congratulated on the hardwood situation in this section. San Francisco dealers have maintained excellent stocks, in fact, in proportion to its industry the San Francisco market is better stocked with hardwoods than are some of the large Eastern centers. When operations commence, San Francisco will be in position to supply immediately the dry hardwoods required.

Home building has been at a standstill for such a long period that new housing is an absolute necessity and, without a doubt, this phase of the building industry will open up with a spurt, more especially as our population has very noticeably increased.

When the flood gates that now hold back the stream of proposed new building construction are finally opened, the building industry will be the most active and vigorous line of business in the world.

* * *

Reinforced Concrete Chimneys*

By SANFORD E. THOMPSON, M. Am. Soc. C. E.

THE first reinforced concrete chimney was built in 1898 by the Ransome & Smith Company for the Pacific Coast Borax Company. Since that time about 400 stacks have been completed, and are distributed through nearly every State of the Union and Canada. These stacks range in height above ground from 50 to 352½ feet, with inside diameter ranging from 4 to 18 feet, the majority of them being 150 to 200 feet high and 5 to 6 feet inside diameter.

Although the large majority of these chimneys have given satisfaction to their owners up to the present time, the failure of a few and serious cracks in several others have caused a number of inquiries to be made as to the reliability of reinforced concrete for chimney construction.

As a consequence of such questions your Association has delegated the writer to investigate the causes of the faulty structures, and the condition of the chimneys now in service, with a view to reporting whether reinforced concrete may be safely recommended for chimney construction.

With this object the writer has visited and carefully examined a number of concrete chimneys; has investigated the causes for the defects in these structures; and has consulted the representatives of some of the companies which make a specialty of this type of construction. Through inquiries made by your Association and by personal correspondence direct reports have been received upon 150 chimneys, and from these it is possible to offer the following definite conclusions and recommendations with reference to this class of construction:

(1) Reinforced concrete is a suitable material for chimney construction.

(2) Reinforced chimneys must be designed and built upon the same principles and by the same methods which have proved essential in other types of reinforced concrete construction.

(3) The defects and failures which have occurred in chimneys thus

*Abstract of a report of an investigation made for the Association of American Portland cement manufacturers.

far built have been due to poor workmanship, faulty design or the use of the wrong concrete mixtures or to all three.

(4) The methods of construction at present being followed in many cases are defective and likely to lead to subsequent failures and they should be radically modified.

* * *

Office Building Depreciation

AN examination of the older buildings in any city will convince almost any one that the economic or commercial life of such buildings has not exceeded forty years. Many of us feel that with the advent of the modern skeleton construction, which had its birth in Chicago in 1887, the climax has been reached in construction and that these buildings will last at least one hundred years—physically they may last two hundred, but it is doubtful if they will have great economical value when forty years old. Mr. Bryan Lathrop, whose memory we all reverse, once remarked, "The future is much wiser than we ever can be."

Every year we see buildings twenty-five to thirty-five years old being replaced with new structures because their commercial life has ended, although perhaps they are still in good condition physically. Some of these when built were the best that could be produced with the engineering and architectural talent of the day, but new devices and methods of construction or changes in business requirements have destroyed them as competitors against these more modern buildings.

There are a number of modern fireproof buildings that have been taken down to make room for larger or different classes of buildings, because these removals made the land more productive by the change, even though the cost of the original structure was added to the value of the land. Of course, had the owner been wise enough to have foreseen the new requirement and designed the building so it could have been readily converted to the new use, its commercial life would have been extended, but such provision would have added a considerable burden to the cost.

How can we best provide against this economic loss? The answer seems to be to set aside a sum for depreciation annually and invest it and its accrued interest in safe securities. The average owner feels that this depreciation will be offset by the increase in the land values, but to benefit by such increase, a sale must be made.

Would it not be far wiser to set aside a fund and invest it in 4 per cent securities and thus, when serious changes are required to prolong the life of the building, the funds will be at hand to do so, and thus revive the economical life and check the rapid depreciation with consequent lowering of the character of the tenants. If a sum equal to 1 per cent of the cost of the building is so set aside annually and invested at 4 per cent and the interest reinvested at 4 per cent, it will equal the cost of the building in forty years. —Edward A. Renwick at convention of the National Association of Building Owners.

* * *

Amiens Cathedral But Little Damaged

A short time ago a solemn thanksgiving service was held in Amiens cathedral, showing that the building has escaped the barbarity of the Hun. As a matter of fact, from reports, it is understood that the damage to this beautiful building has been very slight, although considerable damage has been caused to the buildings surrounding it.

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

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WHAT ARE THE MOST NOTABLE EXAMPLES OF ARCHITECTURE IN A CITY

Various attempts at different times have been made toward encouraging the general public to think and discriminate as to the most notable examples of architecture, landscape architecture, and sculpture in various cities, but nowhere that we know of has the educational importance of the matter been recognized and approached in so stimulating a way as that just adopted by the Oregon Chapter of Architects, for Portland.

Recognizing the large number of fine things in that city which should be published, this magazine decided to make the coming March issue a Portland number, and to this end has agreed to publish only what the Oregon Chapter of Architects, through its committee of selection, decides most appropriate.

It is very probable that the Architect and Engineer will arrange for the publication of similar matter in later issues from Seattle, Wash.; Los Angeles, San Francisco, and Salt Lake City, Utah.

The Oregon Chapter has expanded the idea to include the general education of the public, and with the hearty co-operation of other art interests in the city, has issued the following announcement:—

$25 CASH PRIZE
and other valuable prizes.

CAN YOU NAME THE

10 most notable examples of architecture,
3 most notable examples of landscape architecture,
2 most notable examples of public sculpture,
5 most notable examples of small house architecture costing less than $2500,
within 10 miles of Portland City Hall?

A competent jury consisting of three architects from other states, the curator of the Portland Art Museum and the Professor of Art at the University of Oregon, have been asked by the Oregon Chapter of Architects to examine during the next two months the notable examples of architecture, landscape architecture and public sculpture within 10 miles of Portland City Hall and to select to the best of their abilities the above enumerated examples, on February 1, 1919.

A $25 cash prize, and other valuable prizes to be announced in the daily press, will be awarded to the persons submitting lists of the above mentioned examples nearest identical with the final judgment of this jury.

All types and kinds of existing buildings are to be compared—residences, churches, educational, public and semi-public, commercial and industrial buildings, hospitals, hotels, clubs, etc. Each is to be judged as to whether it is a relatively higher expression of architecture than another. However, the final list is to be made up of those examples deemed most notable regardless of type. Thus if no commercial buildings are found to be of as high a standard as residences, the latter only should be listed, or vice versa.

Points of architecture to be considered are usefulness, arrangement, exterior and interior design, beauty, harmony of details, setting and purpose, color and appropriateness.

The most notable examples of small house architecture are to be considered and judged as a separate contest and awarded special prizes to be announced later.

Anyone may enter this contest, except architects, landscape architects, sculptors and teachers of art or members of their families; and except high school or grammar school students, who may enter the special contest for them listed below.

One list only may be submitted by each contestant.

This contest closes January 31, 1919, and only lists received or mailed on or before that day can be considered.

Make your list on one side of the paper only, and if possible have it typewritten, keeping a duplicate copy. Use plain white paper, preferably 8½x11 inches in size, containing no identifying marks or writing except the proposed selections submitted under the titles Architecture, Landscape Architecture, Sculpture, Small House Architecture. Write clearly and be sure to give the name or type of each example and its accurate address or location. Enclose and seal this list, without any identifying mark, in a plain white envelope, writing your name and address on the outside in the upper left hand corner and mail it by January 31, 1919, addressed to

Contest Secretary, c/o President Oregon Chapter,
American Institute of Architects,
1120 Board of Trade Bldg, Portland, O.

High School and Grammar School Students are invited to submit lists for special prizes to be announced, following the same rules as outlined above, except that the name of your school and grade should be added under the name and address of sender, on the outside of the envelope, which should be mailed to

School Contest Secretary,
Art Association, 5th and Taylor Streets,
Portland, Oregon.

FOR BETTERMENT OF AMERICAN DESIGN AND CRAFTSMANSHIP

An excellent indication of the march of events in these hectic days of grim struggle for the mastery of an ideal in human life is the spirit of usefulness demonstrated by The Metropolitan Museum of Art, New York, an institution devoted to the maintenance of the arts of peace and now doubly anxious that these arts be improved and propagated for the time after the new day has dawned, when our readjusted existence and our millions of returned fighters will require that balance wheel of grace and beauty, which a fine environment affords. By those who have not considered the matter with adequate care, it may be thought that museums of art are among those so-called non-essential factors of a quiet life, suddenly made unnecessary when men's minds temporarily turn to military methods of solving their problems. The museums, however, have shown that the German point of view of peace as only the interval between wars requires complete inversion to apply to American life and thought. War is the infrequent ugly interloper, a destroyer whose reappearance for many centuries, the concluding peace of the present conflict will make impossible.

Believing that the era of progress, which this war will certainly usher into the world, will see an exceptional development in the various industrial arts branches, we are glad to record the step taken by the Metropolitan Museum in the salutary direction of affording an immediate co-operation and assistance to manufacturers of decorative art objects, from furniture and textiles to garments and jewelry. The Museum has established a department devoted specifically to the requirements of producers

and dealers in industrial arts objects, a department which will make every effort to render accessible the invaluable resources of the collections for the betterment of American design and craftsmanship.

This office will be in charge of Richard F. Bach, of Columbia University, formerly one of the editors of Good Furniture Magazine. Mr. Bach's experience in the field and especially his knowledge of the nature of the design problem as related to the requirements of manufacture and merchandising, will make it possible for manufacturers to obtain direct assistance, so that they may henceforth rest assured that there are no unmined treasures in the splendid Morgan and other collections to which they have not immediate access in terms of their own particular problems and requirements. It is planned to make this departure on the part of the Museum directly useful to all designers and producers, dealers and manual craftsmen engaged in any way in connection with the making or selling of furniture, fabrics, floor coverings, clothing, metal work, woodwork, jewelry, laces and any other industrial art branches.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Start Plans for State Buildings

Erection of the Capitol Extension Buildings in Sacramento next year seem probable, Messrs Weeks and Day, the architects, having been instructed to proceed with the drawings.

The contract with the architects, contained a clause to the effect that they should do no more work on the plans until ordered, because of the war. Peace having come, the contract has been amended by the Commission, and State Architect G. B. McDougall was instructed to execute the same.

The Governor has expressed himself as anxious to have the work proceed with all expedition possible, and the other members have taken the same attitude.

The next step will be the making of the preliminary working plans, which means that the architects will have to hold conferences with the heads of the various departments of the State Government, so that their ideas may be incorporated into the working plans with a view to convenience. The original arrangement of the offices by the architects is only provisional, and rearrangements as to location probably will be made in several instances, to better coordinate departmental work.

It will require three or four months to complete the preliminaries, after which the working plans will be made and blue prints struck off for convenience of the bidders on construction.

Money for the payment of the architects will be forthcoming through the Board of Control taking enough of the bonds to pay for the work.

Honor for Mr. Newman

Due to the ruling or the War Department at the entry of the United States into the war, no one in Government service was permitted to be examined for a commission. This ruling was, however, finally withdrawn in the case of Mr. Wm. Arthur Newman, architect of San Francisco, who has been in the Government service for some years, and he was examined in October and recommended for a commission as Captain in the Army Engineers.

Expect $500,000 in New Work

Messrs. Cunningham & Politeo, First National Bank Building, San Francisco, have assurance of at least $500,000 worth of new work the coming year. They have been commissioned by the proprietors of the Techau Tavern to design an elaborate cafe in the two-story St. Francis Theatre on Geary street opposite the St. Francis hotel. The present Techau Tavern site has been purchased by the Bank of Italy which is to build a bank building there. Approximately $100,000 will be expended in fitting up the new cafe and the instructions to the architects are to spare no expense, to make it one of the best on the Pacific Coast. There will be seating accommodations for six hundred persons. The second floor will be arranged for private dining rooms and boxes. The dancing floor will be built below the main floor, the tables being arranged on tiers. Entrances to the cafe will be on both Geary and Powell streets.

The same architects are preparing plans for a duplicate of the Arcadia Dancing hall in San Francisco, the building to be constructed in the down town section of Oakland. This structure will represent an outlay of from $50,000 to $100,000.

Frank Wilson Young

Mr. Frank Wilson Young died at his home, 1001 South Hoover street, Los Angeles, November 24, of pneumonia following an attack of influenza. He was 31 years of age. His mother, Mrs. Mary C. Young, and a sister, Mrs. Mary Young Moore, survive. Mr. Young was educated at St. Vincent's College in Los Angeles and at St. Mary's College, Oakland. He secured his architectural training in the office of his father, the late Mr. R. B. Young, and was associated with his father in the practice of architecture with offices in the Lankershim building. Mr. Young was a member of the Southern California Chapter of the American Institute of Architects, the Jonathan Club, Los Angeles Chamber of Commerce, Athletic Club, Native Sons of the Golden West, and the Elks.

Officail Minutes of San Francisco Chapter, A. I. A.

THE regular monthly meeting of the San Francisco Chapter of the American Institute of Architects was held on Thursday, November 21st, at the Palace hotel. Previous to the business meeting the Chapter attended a luncheon given by the Home Industry League in honor of "Architects' Day," at which Mr. George B. McDougall, state architect, was the principal speaker. At the conclusion of the Home Industry League's meeting, the Chapter meeting was called to order at 1:40 p. m. by the President, Mr. Sylvain Schnaittacher.

Messrs. R. J. Joseph and Thomas Smith were appointed tellers to count the ballots on the new Constitution and By-laws. Fifty-six ballots were received and counted. Fifty-one were affirmative and 5 negative. The tellers having made their report, the Chair declared the new Constitution and By-laws adopted as of this date.

The amendment submitted with reference to the Competitions Committee was declared lost. Thirty ballots were received—necessary to choice—30. The voting was 16 in favor and 14 against.

The Chair announced the appointment of the following standing committees for the ensuing year:

San Francisco Sub-Committee on Competitions of the American Institute of Architects—Sylvain Schnaittacher, chairman; George W. Kelham, William Mooser, Morris M. Bruce, Arthur Brown, Jr.

Committee on Relations with Coast Chapters—W. B. Faville, chairman; Edgar A Mathews, M. V. Politeo.

Committee on Building Laws—G. A. Applegarth, chairman; G. A. Lansburgh, Albert Schroepfer.

Committee on Legislation—J. J. Donovan, chairman; Charles H. Cheney, Alfred H. Jacobs.

Committee on Public Information—Wm. Mooser, chairman; J. Harry Blohme, Merritt, J. Reid.

Committee on Education—Arthur Brown, chairman; John Reid, Jr., Wm. C. Hays.

Committee on Entertainment—Fred H. Meyer, chairman; T. Paterson Ross, Clarence R. Ward, James R. Miller.

Committee on Library of Architectural Clubs—Arthur Brown, chairman; Wm. C. Hays.

SPECIAL COMMITTEES.

Committee on Collection of Delinquent Dues—G. A. Lansburgh, chairman; J. S. Fairweather, M. M. Bruce, C. A. Meussdorffer, J. W. Dolliver.

Committee on Building Material Exhibit—J. W. Dolliver, chairman; M. M. Bruce.

Committee to Audit Books of Secretary-Treasurer—J. S. Fairweather, R. J. Joseph.

On motion duly made, seconded and carried, the resignation of Mr. W. H. Crim, Jr., was accepted with regret.

The following communications were read: From the Industrial Accident Commission requesting the Chapter to appoint a member of the Committee on General Lighting and Safety Orders; from Senator James D. Phelan, thanking the Chapter for its appreciation of the introduction of a bill providing that gifts or works of art to foreign nations be approved by the National Commission of Fine Arts; from Mr. Charles P. Weeks, expressing the appreciation of the firm of Weeks & Day of the compliment paid them by the San Francisco Chapter in the resolution of October 17th in the matter of the Capitol Extension Buildings at Sacramento.

On motion duly made, seconded and carried, the President was directed to appoint a member of the Committee as requested by the Industrial Accident Commission.

The chair announced with deep regret the loss sustained by the Chapter in the demise of Mr. Thomas J. Welsh, a charter and honorary member of the Chapter, who passed away on October 19th, 1918. On motion duly made, seconded and carried, the Chair was instructed to appoint a committee to draft suitable resolutions and forward the same to the family of the deceased.

The chair announced that it was desirable that the Chapter proceed with a programme for the reconstruction period and pending the receipt of the Institute's programme, should inaugurate a programme of its own dealing with local conditions. This would be supplementary to the Institute's programme and would also constitute a useful service. The subjects outlined for consideration were: A revision of the San Francisco Building Laws, standardizing specifications to meet local conditions, architectural education in the public schools, particularly the vocational and evening schools, and public information regarding the profession of architecture.

On motion duly made, seconded and carried, the chair was directed to embody the suggestions in a circular to be sent to all Chapter members.

MORRIS M. BRUCE, Secretary.

Architects Are Good Eaters

There is an old saying that runs something like this: "You can win a man's heart through his stomach." Since peace was declared it seems that some of San Francisco's more enterprising organizations have undertaken to win the architect—not necessarily his heart but his good will and co-operation. As evidence of this, no less than three luncheons have been given to the members of the profession in as many weeks. First, the architects were dined by the Home Industry League. This was a very happy affair at the Palace, presided over by Mr. Charles T. Phillips. Next came a luncheon at the Building Material Exhibit, and before the guests had fairly digested this meal they were invited to eat with the Electrical Development League at the Palace hotel. All three functions were much enjoyed and probably accomplished their purpose, that of bringing the profession in closer touch with the trade.

New Home of Drug Company

Messrs. Ward & Blohme, Alaska Commercial building, San Francisco, have completed preliminary plans for a four-story and basement reinforced concrete factory and office building to be erected on the northeast corner of Eighth and Howard streets, San Francisco, for the Owl Drug Company, at an approximate cost of $200,000. The building will be of fireproof construction with concrete walls, floors and roof, steel sash, automatic fire sprinklers, steel rolling doors, freight elevators, gravity chutes, conveyor system, and steam heating plant. A garage and power plant are also included in the scheme.

The same architects are preparing plans for a country home to be built at Burlingame for Mr. William P Fuller, Jr., at a cost of $25,000 or more.

Many New Schools

With Mr. John Reid, Jr., head of the San Francisco municipal Bureau of Architecture, First National Bank Building, San Francisco, will devolve the task of designing the many new school houses San Francisco will need the coming year. Plans have been completed by Mr. Reid for the new Twin Peaks Primary school, which is to cost in the neighborhood of $25,000, and drawings are under way for a two-story frame and brick veneer schoolhouse in the Richmond district to be known as the Park Presidio School. This structure will contain about eighteen rooms and an assembly hall and will cost in excess of $100,000.

Brick Factory

Mr. E. A. Garin, 1849 Page street, San Francisco, has completed plans for a four-story and basement brick factory building, offices and salesrooms to be erected at Fourteenth and Valencia streets, San Francisco, for the San Francisco Casket Company. The building will be 50x215, and of mill construction type. The equipment will include steel fire doors, steam heat, one freight and one passenger elevator, two dumb waiters and special wiring for lighting the showroom. The contract for this building is expected to run as high as $70,000.

English Architect Weds in San Francisco

Miss Dagny Johannessen, who traveled all the way from Bodo, Norway, to San Francisco, became the bride of Mr. Andrew Charles Richmond, an architect of Liverpool, England, at a quiet wedding at Grace Cathedral, San Francisco, November 25. Dean Wilmer J. Gresham officiated. The couple had arranged to meet in San Francisco for the wedding ceremony.

Academy of Science Building

Among the buildings to be erected early the coming year will be one in Golden Gate Park, San Francisco, adjoining the museum, and to be known as the Aquarium. Funds for this structure, amounting to $250,000, are now available from a bequest by the late Mr. I. Steinhart. At the November election the voters authorized the Supervisors to spend $20,000 annually for the maintainance of the Aquarium. Preliminary plans by Architect Lewis P. Hobart are now in the hands of the building committee, of which Dr. Everman is chairman. They call for a structure 150x130 and largely of steel and glass.

Masonic Temples

Mr. Carl Werner, Phelan building, San Francisco, expects to turn out plans next year for new Masonic buildings costing $500,000 or more. The list includes a Scottish Rite Temple at Fresno and a Masonic building at Stockton, also a one-story brick addition to the Masonic Home at Decota. Working drawings for the latter are being completed.

Plans are being prepared by the same architect for a municipal building for South San Francisco to cost $100,000. Mr. Werner hopes to let contracts for this structure early in June. Construction will be of brick and steel.

Soldier Memorials

Modesto—A county memorial to soldiers who lost their lives in the world war will be erected by Stanislaus county. The project has been approved by the Council of Defense. What form the memorial will take has not been determined.

Fresno—The Liberty cemetery and memorial committee of Fresno county has started a campaign to raise $30,000 for the erection of a granite or bronze monument and gates to the burial place of Fresno soldiers who were killed in the world war. Mr. T. J. Hammond is chairman of the committee.

Alterations and Repairs

Mr. Lyman Farwell, 2908 S Figueroa street, Los Angeles, has prepared plans for the alterations and repairs to the residence of Mrs. E. R. Wood at Beverly. Structural changes and additions are being completed which will provide a living room 30x18 feet, a new foyer 30x10 feet, morning room 28x17 feet, and a bay window 15x16 feet. The rooms will have wainscot of quarter sawed white oak from floors to ceilings, and oak floors will be laid. There will also be ornamental plastering. A steam heating plant will be installed.

Washington State Chapter, A. I. A.

The Washington State Chapter held its November meeting on Monday the 18th. Mr. J. H. Vogel, an architect who has practiced for a number of years in Japan and who is now with the Army Y. M. C. A., gave an interesting talk on ancient and modern Japanese architecture, showing interesting photographs to clarify his address. Mr. Vogel has designed a number of modern buildings in the Japanese style. The meeting was also addressed by Mr. Hope, an architect of Victoria, who has been in service in the Canadian Army.

Mr. Harlan Thomas, who has been in charge of the building program of the Seattle More Homes Bureau, gave a report which indicated the beneficial effects of the work that the architects had done.

The Program committee was authorized to prepare for the annual meeting to be held on January 8th, to which it is expected all the Chapter members in the State of Washington and all architects in general will be invited to attend. The meeting will take the form of a convention with the usual officials.

Mr. Charles H. Alden, one of the Chapter members in Army service, has recently been detached from the office of the Depot Quartermaster at Boston and ordered to France.

Architect E. E. Young Busy

Mr. E. E. Young, 251 Kearny street, San Francisco, reports that construction will be started early in the new year on two apartment houses, work upon which was deferred by the war. Both are for Mr. Herman Hogrefe, 110 Upper Terrace, San Francisco. One building will be a four-story brick and will be erected on Leavenworth street, near Eddy, at an estimated cost of $50,000. The other building will be a three-story frame structure at Stockton and Pine streets, to cost $30,000. Both structures will be built by segregated contracts. Mr. Young is also making plans for a frame apartment house on Dolores street, to cost $16,000.

The Julia Morgan Number

Editor The Architect and Engineer:

Let me congratulate you on the very charming presentation of the work by Miss Morgan. The work itself is full of architectural life and is very valuable as a lead to refined design and thoughtful building.

Yours very truly,
CHARLES CRESSEY, Architect.

Colusa Needs New Hospital

According to the city authorities of Colusa, a hospital is so badly needed that unless money can be raised for a new building, the old grammar school will be remodeled for the purpose.

Big Coast Plant for U. S. Motor Corps

The motor transport corps, which has in charge all wheeled vehicles of the Army, is making plans for the erection of a regular plant in San Francisco similar to those in eastern and southern cities that cost between $750,000 and $1,000,000. Offices have been opened in the Monadnock building, San Francisco, with Colonel S. B. Pearson in command of this district, which includes the coast north of Palo Alto.

In line with a general plan of preparedness as well as caring for the thousands of trucks in Army service in this country and those to be brought back from France, these repair stations are being erected. Each is being equipped with an abundance of spare parts and three warehouses 160 by 900 feet. The main repair shop will be 500 feet square.

Army men think the trucks now used are not to be sold, but put on public work, such as road building and carrying mail. At any rate the demobilization plans will call for every truck now in service for eighteen months, it is estimated. The local shop will be manned by forty-seven officers and 1241 men.

New Car Shops at Sacramento

The United States Railroad Administration, for the Central Pacific Company, has taken out building permits with the city of Sacramento for the erection of three separate buildings on the Southern Pacific shop site in that city. The largest permit totaled $45,000 and was for the new one-story corrugated iron steel foundry. A permit to erect a steel and concrete car repair shop showed that the cost of the building will be $29,900. The third permit was for the erection of a one-story frame parcel post building at a cost of $4,600.

Store Building

Mr. Laurence A. Myers, Foxcroft building, San Francisco, has purchased the southeast corner of Fillmore and O'Farrell streets, San Francisco, having a frontage of 120 feet on Filmore and 137.6 feet on O'Farrell street and Austin avenue. Plans will be prepared by Mr. Sam L. Hyman, architect in the Crocker building, San Francisco, for a two-story store and office building to cover the entire lot.

Factory for West Oakland

The American Machine Works, Mr. A. A. Wise, president, has just purchased five acres bounded by Wood, Willow, 24th and 26th streets, West Oakland, from the Realty Syndicate Company, Oakland, as a factory site. Application for a spur track from the Santa Fe railroad has been made. Buildings costing $100,000 or more are to be constructed.

Proposed Building Construction in 1919, San Francisco and Bay Cities

Following is a summary of work which San Francisco and Bay city architects expect to turn out the coming year:

HOSPITALS.

Addition to Masonic Hospital, Decoto, Carl Werner, architect $40,000

Eight temporary frame ward buildings, Letterman hospital, Presidio of San Francisco (work started) $60,000

Three ward buildings and other structures at U. S. Marine hospital, San Francisco $150,000

Group of hospital buildings in city of Oakland for Alameda county. Plans being prepared by Henry H. Meyers..... .....$250,000

County hospital group, near Redwood City, W. H. Toepke, architect....$250,000

First unit of hospital group, Relief Home, San Francisco .....

Tubercular county hospital, San Francisco, John Reid architect.....$100,000

S. F. MUNICIPAL BUILDINGS

(As recommended by City Architect John Reid, Jr.)

Police and Fire Station, Civic Center.

Two additional branch libraries.

Board of Health building, Civic Center.

Group of new buildings at the Relief Home.

Chapel at the City and County hospital.

Twenty-three new school houses.

Auto shelter at the Mission Emergency hospital.

Possible opera house and University Extension building in Civic Center.

MISCELLANEOUS

CARL WERNER, Phelan building, San Francisco:

Scottish Rite Temple, Fresno....$250,000

Municipal building, South San Francisco $100,000

Masonic Temple, Stockton.....$200,000

Addition to Masonic Home Hospital, Decoto $50,000

JOHN REID, JR., First National Bank building, San Francisco:

Country residence in San Mateo county for Mayor James Rolph, Jr.....$100,000

Park Presidio School.....$100,000

Twin Peaks Grammar school (bids received) $22,000

E. A. GARIN, 1849 Page street, San Francisco:

Four-story and basement brick factory building, Fourteenth and Valencia streets, for the San Francisco Casket Company (plans completed) $70,000

REED & CORLETT, Oakland Bank of Savings building, Oakland:

Municipal bandstand, Lakeside Park, Oakland $75,000

Additional buildings at Lake Chabot Observatory $30,000

Two-story and basement frame residence for City Attorney H. L. Hagan, Calmar avenue, Oakland.....$8,000

Two houses for Dr. C. H. Farman, Park Drive, Claremont, Berkeley, each $6,000

EDWARD G. BOLLES, 233 Post street, San Francisco:

Three-story reinforced concrete warehouse $40,000

ROUSSEAU & ROUSSEAU, French Bank building, San Francisco:

Two-story auto sales building, Van Ness avenue and Washington street, San Francisco $35,000

GEORGE W. KELHAM, Sharon building, San Francisco:

Federal Reserve Bank building, Sacramento and Sansome streets, San Francisco $500,000

School building and other structures at Vallejo (U. S. Housing project).

Bank building at Tracy, for the West Side bank $60,000

JOHN R. MILLER, Lick building, San Francisco:

Two-story and basement frame apartment house for Mr. M. Harris, Palo Alto $70,000

Reinforced concrete commercial garage, Palo Alto 50,000

JULIA MORGAN, Merchants Exchange building, San Francisco:

Three-story brick theological college for Berkeley Baptist Divinity School..$150,000

Frame church for Trinity Parish, Richmond $20,000

Country residence at Sacramento..$25,000

H. A. BROBERG, C. E., Merchants Exchange building, San Francisco:

Group of factory buildings for National Lead Company, Melrose.....$200,000

I. ZANOLINI, 604 Montgomery street, San Francisco:

Alterations and additions to brick building on Columbus avenue, for Mr. C. E. Vitalini $15,000

P. RIGHETTI, Phelan building, San Francisco:

Alterations to frame apartment house.. .....$20,000

PHILLIP BUSH, 101 California street, San Francisco:

Two-story reinforced concrete cannery and packing house, Hollister, for the California Packing Corporation..$150,000

One-story reinforced concrete warehouse, Honolulu, for the California Packing Corporation $250,000

WASHINGTON J. MILLER, 208 Lachman building, San Francisco:

Additions to present cannery, Libby, McNeill & Libby, Sacramento..$180,000

Community housing scheme (embodying 12 two-family houses, 64 single family houses, dormitory, caretaker's house, two comfort building, recreation building, nursery and play ground) for Libby, McNeill & Libby $200,000

VALENTINE N. DALTON, C. E., Foxcroft building, San Francisco:

Four-story and basement reinforced concrete and brick veneer factory, 150x300, for Chevrolet Motor Car Company, Oakland $250,000

WILLIAM KNOWLES, Central Bank building, Oakland, and Hearst building, San Francisco:

Three-story store and loft building, 11th street, near Washington, Oakland, for Whitthorne & Swan.....$30,000

T. PATERSON ROSS, 310 California street, San Francisco:

Eight-story reinforced concrete community apartment house, San Francisco. (Seven apartments of six and seven rooms each) $80,000

One-story and basement reinforced concrete commercial garage, 90x120, San Francisco $25,000

Alterations to Greenwich Terrace..... Apartments, Greenwich and Leavenworth streets, San Francisco (work under way) $3,500

H. P. HOYT, Monadnock building San Francisco:

Factory for American Manganese Steel Company, Key Route basin, Oakland (pile foundations started) $150,000

WILLIAM H. WEEKS, 75 Post street, San Francisco:

Alterations and additions to bank at Red Bluff, Tehama county (work under way) $50,000

One-story hollow tile school building, Hamilton $30,000

Four-story hotel, Woodland, Yolo county $100,000

Alterations to First National Bank, Palo Alto $15,000

Residence for Mr. J. I. McConnell, President of Yolo County Savings bank, Woodland .....$15,000..

E. A. NEUMARKEL, 1566 O'Farrell street, San Francisco:

Two-story class C loft building for Mr. M. Levin at Third and Nineteenth streets, San Francisco.....$20,000

HELLER & WILSON, 57 Post street, San Francisco:

Completion of high pressure irrigation plant for F. L. Hill at Bixler, Contra Costa county.....$40,000

Two-story frame residence at Redwood City $10,000

FREDERICK H. MEYER, Bankers Investment building, San Francisco:

Completion of an additional story to the Bankers Investment building (work under construction)...$100,000

One-story frame cafeteria building at Bay Point, Contra Costa county, for Pacific Coast Shipbuilding Company $40,000

Additions and alterations to Bank of Italy building, Broadway and Eleventh street, Oakland $25,000

One-story addition to loft building and constructing saw-tooth roof to another portion of same building, San Francisco $30,000

O'BRIEN BROS, INC., 240 Montgomery street, San Francisco:

Two-story and basement brick hotel for O. Merlo, at Redding, Shasta county, California $22,000

Altering frame flat building into apartments, Post street, San Francisco..$6,000

Factory for manufacturing soda water, Northern California $30,000

Two-story reinforced concrete garage, Larkin and Sutter streets, for Dr. Thos. Shumate $40,000

G. A. APPLEGARTH, Claus Spreckels building, San Francisco:

Four-story reinforced concrete addition to Ransohoff building, Post street and Grant avenue, San Francisco....$50,000

Prospects of large apartment house and several commercial buildings and warehouses.

WARD & BLOHME, Alaska Commercial building, San Francisco:

Four-story and basement reinforced concrete factory and office building, Eighth and Howard streets, San Francisco, for Owl Drug Company $200,000

Two-story and basement country residence, Burlingame, for Mr. W. P. Fuller, Jr. $25,000

Two-story and basement frame residence, Vallejo street, near Broderick, for Mr. James Talbot $15,000

FREDERICK SODERBERG, First National Bank building, Oakland:

Two-story and basement brick school building for the town of Emeryville $40,000

SMITH & O'BRIEN, Bankers Investment building, San Francisco:

Reinforced concrete edifice for St. Edwards Church, California and Walnut streets, San Francisco.....$65,000

Three-story and basement frame apartment house, in Western Addition..$50,000

Alterations to two residences.

ALBERT FARR, Foxcroft building, San Francisco:

Two-story, basement and attic Tudor style residence, garage and other buildings, Oakland $100,000

Alterations and additions to residence, San Rafael, for Mr. Frank B. Anderson.. .....$5,000

FREDERICK WHITTON, 369 Pine street, San Francisco:

Factory for Remar Baking Company, Oakland (under construction)..$100,000

BLISS & FAVILLE, Balboa building, San Francisco:

Four-story and basement Class "A" State Building, Civic Center, San Francisco... .....$1,000,000

One-story brick store building, Sutter and Grant avenue, San Francisco, for the Baird Estate (construction started)..... .....$15,000

LEWIS P. HOBART, Crocker building, San Francisco:

Aquarium for Academy of Science, Golden Gate Park .....$250,000 (Preliminary sketches prepared.)

Two residences at Pebble Beach, Monterey $30,000

WEEKS & DAY, Phelan building, San Francisco:

Two Capitol Extension buildings, Sacramento $3,000,000

Bank building, Sacramento..$1,000,000

WILLIS POLK, Hobart building, San Francisco:

Country residence for Col. D. C. Jackling, San Mateo county.....$500,000

(Mr. Polk has prospects of a large bank building and a commercial structure, the latter similar to the glass front building, owned by the Regents of the University of California, on Sutter street, San Francisco.)

W. H. RATCLIFFE, JR., First National Bank building, Berkeley:

Four-story mill construction warehouse, 45x137½ ft., for Mr. Geo. E. Billings, San Francisco $40,000

Alterations to two-story loft building, Stuart street, near Howard, San Francisco, for Mr. Geo. E. Billings.....$5,000

Three-story frame apartment house, 75x 95 ft. (twenty-one apartments of 2 and 3 rooms each), Webster street, Oakland. $65,000

Three-story frame apartments, Berkeley. $55,000

Residence in Oakland $14,000

REID BROS., California-Pacific building, San Francisco:

Ten-story Class "A" office building on lower Market street for the Matson Navigation Company $300,000

C. H. JENSEN, with John Reid, Jr., First National Bank building, San Francisco:

Two-story and basement frame residence and garage, St. Francis Wood, for Mrs. E. J. Peake $13,000

Factory buildings for California Alkali Company, Inyo county $10,000

U. S. GOVERNMENT ENGINEERS, 395 Monadnock building, San Francisco:

Motor transport district repair plant, 500x 500, and two warehouses, 160x900, for U. S. Government $750,000

CUNNINGHAM & POLITEO, First National Bank building, San Francisco:

Converting St. Francis Theatre into cafe for Techau Tavern $100,000

Arcadia Dancing Hall, Oakland..$100,000

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WILLIAM H. CRIM, Jr., Kearny Street, San Francisco:

Commercial building, Los Gatos (bids taken) $5,000

Prospects of apartments, flats and residence work.

HENRY H. MEYERS, Kohl building, San Francisco:

County Hospital, Oakland.....$250,000

WALTER C. FALCH, Hearst building, San Francisco:

Residence for Mr. A. Spencer, Mill Valley $7,500

Four houses for Newhall-Murdock Realty Company, Forest Hill ($15,000 each) $60,000

ALBERT SCHROEPFER, Nevada Bank building, San Francisco:

Three-story frame apartment house, San Francisco $30,000

Alterations to two-story frame flats (apartments) $10,000

E. E. YOUNG, 251 Kearny street San Francisco:

Three-story frame apartment house, Stockton and Pine streets, for Mr. Herman Hogrefe, 110 Upper Terrace, San Francisco $30,000

Four-story Class "C" brick apartment house, Leavenworth street, between Eddy and Ellis streets, San Francisco, for Mr. Herman Hogrefe $50,000

Three-story frame apartments, Dolores and Hidalgo streets, San Francisco, for Mr. Barnum $18,000

W. E. MILWAIN, Albany building, Oakland:

Three-story frame apartments in Sea Cliff District, San Francisco....$30,000

Alterations to two-story brick store and rooming house, San Pablo avenue, Oakland $40,000

Alterations to one-story residence for H. W. Meek Estate, Inc., San Lorenzo $5,000

Alterations to two-story frame residence for Mrs. E. V. Pickett, Hillside avenue, Piedmont $5,000

C. W. DICKEY, Oakland Bank of Savings building, Oakland:

Country residence and private garage at Nuu Aoee Valley, Honolulu, for Mrs. A. S. Wilcox .....$70,000.

Residence for Mr. Frank D. Willard, Los Gatos $15,000

Farm buildings for Kahn-Furth orchard, Winters $30,000

C. O. CLAUSEN, Hearst building San Francisco.

Two story apartment house, 18th and Anza street, San Francisco, for P. Chapman $10,000

Two story frame and brick veneer apartment house, Richmond District, San Francisco $20,000

MYRON HUNT, Hibernian building, Los Angeles.

Six story reinforced concrete family hotel and group of bungalows, Wilshire boulevard, Los Angeles, for California Hotel Company (owners of Fairmont hotel, San Francisco..... .....$2,000,000

SUMMARY OF SAN FRANCISCO HARBOR WORK FOR 1919

Chief Engineer Frank G. White of the State Harbor Board has made an estimate of the probable improvements which will be made along the San Francisco waterfront the coming year. The plans call for an expenditure of more than $3,000,000, divided as follows:

New wharves for Islais creek	$368,500
Islais bulkhead wall and wing wall	241,500
Islais creek, dredging and filling	120,000
Two-story shed on Islais wharves	280,000
Pier No. 1, substructure	343,000
Warehouse on Lot 4	330,000
Two-story shed on Pier 39	287,000
Shed on Pier 33	157,000
Bulkhead wharf, Pier 5	34,000
Bulkhead wharf, Pier 19	14,000
Paving Bay street to Union	30,000
Paving Pacific street to Washington	12,000
Paving Folsom street to Harrison	48,000
Connecting wharf between Piers 39 and 41	189,000
Two-story shed, wharf 39, 41	170,000
Connecting wharf between 26 and 28	114,000
Shed on wharf 26, 28	33,250
Bulkhead wharf and shed extension, Pier 41	42,137
Two-story bulkhead wharf building, Pier 39	23,800
Extension to Pier 20	41,000
New shed on Pier 20	14,940
Extension to Pier 22	71,250
Shed extension to Pier 22	23,667

Los Angeles Architects' Chapter Meeting

Mr. H. M. Patterson was elected president of the Southern California Chapter of the American Institute of Architects at the December meeting. Mr Lyman Farwell was elected vice-president, Mr. H. F. Withey was re-elected secretary and Mr. August Wackerbarth was re-elected treasurer. The following members of the executive committee were chosen: Messrs. S. B. Marston, Pasadena, for three years; Robert H. Orr, two years, and Walter E. Erkes, one year. The new officers will be installed at the January meeting.

State Senator Dwight H. Hart, one of the proprietors of the New Rosslyn Hotel, was present as a guest of the chapter. A proposed amendment to the state hotel law was discussed. In the law enacted at the last session of the legislature a provision was inserted providing that no fireproof hotel building should be erected exceeding 150 feet in height, or one and one-half times the width of the street on which it is located. Many streets not being of sufficient width to permit the erection of buildings 150 feet in height, this provision has interferred with the construction of some hotels.

The chapter instructed its committee on legislation to draft an amendment to the hotel law, to be presented to the legislature, eliminating the height restrictions so far as it relates to width of streets.

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Poetry for Business Men.

Architect and Builder, Cape Town.

IT has repeatedly been stated by narrow-minded individuals that there is no room in the business world for poetry, and that to become a successful business man it is necessary to eliminate all sentiment, all human feeling, and all appreciation of the beautiful from one's soul; this is absurd. When a man has a weighty financial problem with which to grapple he naturally doesn't start thinking of poetry; he concentrates on the task before him, and brings every atom of his brain power to bear upon it; but what about it when he has successfully accomplished his task? Is he not very, very human? The brain of the business man is constantly absorbing hard facts and thinking of ways and means to achieve greater efficiency and correspondingly greater results, and he has little time for the contemplation of the high arts, but that he can and does appreciate fine thoughts expressed in poetic form is a proven fact.

So for the benefit of our readers we are reproducing E. Spencer Warner's "Ballad of Business," a poem which has been written for business folk:

If you make a better brace and bit, a better lightning-rod,
If you make a better ash cart, or spade to turn the sod,
A mighty clever writer says the folks who want your goods
Will somehow blaze a pathway to your workshop in the woods.

Yes, the folk will blaze a pathway straight to your workshop door:
They will order and will order, then come back and order more.
But there's just one hint you have to have—you'll heed it if you're wise,
They will never know you have the goods unless you advertise.

Go, plant your shop in Africa, or on the Firth of Forth:
You can build it anywhere you like, South, West or East or North;
If you stick to advertising prosperous days will soon prevail,
And the folks who can't make pathways will order goods by mail.

You can keep the world revolving if you keep your engines going,
You can keep your fame and factory continually growing,
If you make a worthy article for folks who want to take it,
And now and then break forth in print and tell them that you make it.

And folks won't mind the prices that are higher than the rest,
As long as you convince them that your products are the best,
Build your shop wherever pleases you, in mountains, hill or dale—
If you keep on advertising you can sell your goods by mail.

What is Man?

A man weighing 150 pounds approximately contains 3500 cubic feet of gas, oxygen, hydrogen and nitrogen, in his constitution, which at 80 cents per thousand cubic feet would be worth $2.80 for illuminating purposes. He also contains all the necessary fats to make a 15-pound candle and thus, with his 3500 cubic feet of gases, he possesses great illuminating possibilities. His system contains 22 pounds and 10 ounces of carbon or enough to make 780 dozen or 9360 lead pencils. There is about 50 grains of iron in his blood and the rest of the body would supply enough to make one spike large enough to hold his weight. A healthy man contains 54 ounces of phosphorus. This deadly poison would make 800,000 matches or enough poison to kill 500 persons. This with two pounds of lime makes the stiff bones and brains. No matter how sour a man looks he contains about 60 lumps of sugar of the ordinary cubical dimensions, and to make the seasoning complete must be added 20 spoonfuls of salt. If a man were distilled into water he would make about 38 quarts or more than half his entire weight. He also carries a great deal of starch, chloride of potash, magnesium, sulphur and hydrochloric acid in his system.

Break the shells of 1000 eggs into a huge pan or basin and you have the contents to make a man from his toe nails to the most delicate tissues of his brain. And this is the scientific answer to the question, "What is man?"—Club News.

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How to Make a Perspective Drawing — A Practical Method of Correctly Rendering a House in Perspective

By George Lawrence

Ability to make a perspective drawing is a decided asset to the builder. Such knowledge will enable him to readily sketch out his ideas on paper so that his client can quickly grasp their meaning.

It is invaluable where the idea for a new porch, storm door, etc., is to be sold a house owner. Actual picturing of the results will always do much to close a sale.

THE effect of distance upon the appearance of objects, causing, as it does, their apparent diminution in size in direct proportion to the distance they are from the human eye or a camera, is called perspective. Perspective drawing is the representation of this effect upon a flat surface. Objects drawn in correct perspective stand out natural and pleasing to the eye, and one gains at a glance an accurate idea of their shape and proportions.

The builder, architect, engineer, furniture designer, decorator and many others in the professions and trades are often required to execute and submit perspective drawings. Perspective sketches, too, are often of great value in some of the trades. This is especially the case in machine and wood-working shops. If an object is fairly simple in design, the workman can as a rule work to a perspective sketch, if it is properly labeled, more easily than he can follow a three-view scale drawing. The perspective sketch gives a general outline of the object at a glance and this is what every workman must have impressed upon his mind before he can go ahead intelligently with any piece of work.

When it is desired to represent any large object or group of objects in perspective, it is first necessary to determine the point of view from which the object is to be observed—that is, whether it is to be viewed from above, below or on a level with the eye; also, whether one, two or three sides are to be exposed to view. An imaginary horizontal line on a level with the eyes we call the line of vision.

The line of vision for the average individual, when standing, is about 5 feet, 6 inches above the ground. Some objects come above this line and some below it, while others extend both above and below it. An ordinary table standing upon the floor, for example, comes considerably below the line of vision; therefore a perspective view of a table in this position will show the entire top surface to good advantage. The table, however, may be raised to a higher level so that it comes above the line of vision, and in this event the under side will be exposed to view, showing some of the details of construction. Buildings on a level with the ground one stands upon cross the line of vision; that is, part is below, part is above and part is on an exact level with the line of vision —see D in the accompanying drawing.

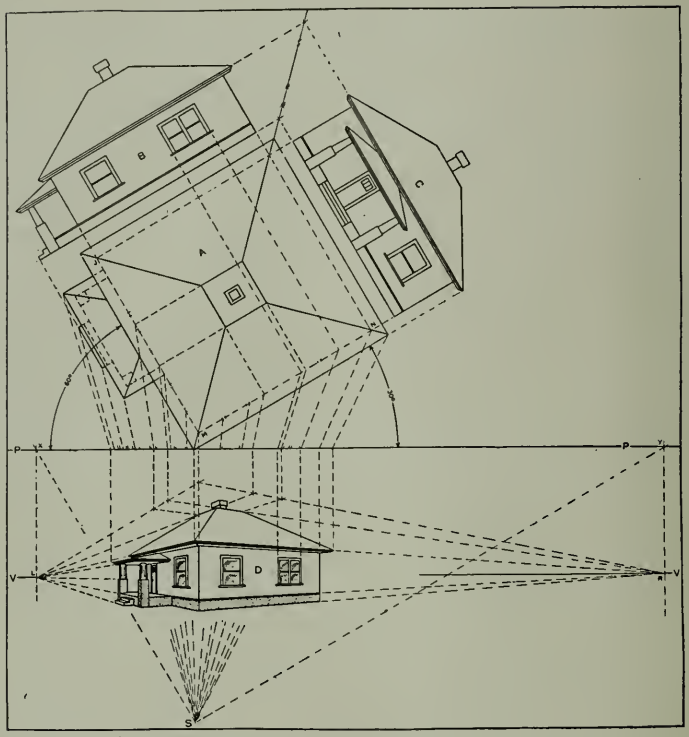
After the line of vision is determined, one must choose the angle of view desired. A corner view will expose at least two sides to view, and this is usually just what is wanted.

In order to have a base line to work from, when one begins his laying-out on paper, the line P P (picture plane) is first drawn across the board. Then a plan of the object is plotted above this line so that one corner touches the line, as shown in sketch. If a 45-degree angle view is desired, the object is plotted with its sides at an angle of 45 degrees to this line. In the example used herewith the plan of the house is plotted so that one side lies at an angle of 30 degrees, while the front side lies at an angle of 60 degrees to the line P P. This side and front are then projected across and drawn in elevation, as shown at B and C respectively.

The third and last thing one must determine before he can proceed is to choose a station point or point of observation from which the object is supposed to be viewed. Here one must use good judgment. If the station point is located too close, the perspective will be too severe to look well, and difficulties will arise in laying it out. On the other hand, if it is too far away the vanishing points will be perhaps out of reach or too far from the drawing to show them conveniently on ordinary sized paper.

In the accompanying drawing the observer, stationed at S, is standing at a distance equal to a little more than the width of the house away as he views it at A. While this drawing shows only a straight-down view of the roof at A, an observer stationed at S sees the side and front of the house, the porch, part of the roof and part of the chimney. To him it looks exactly like the perspective drawing D. The station point S can, of course, be located a little nearer or a little farther away from the plan, at the option of the draftsman.

Now that the line of vision, the angle of view and the station point are located, one can go ahead with a perspective layout. In this example I have located the plan, the two elevations and the perspective view all in one compact drawing, in order to show clearly how every point and line is obtained, but this is not necessary in practice. The elevations may be



An example in perspective. A is plan, B and C elevations, D perspective drawing, V V line of vision or horizon, P P picture plane, S station point of observer, L and R vanishing points, and M S line of measure.

on the same level and over to one side, or even on separate paper, and the perspective D may be drawn in below point S if desired.

As stated before the vanishing points (there is one at the left and one at the right for the respective sides) lie on the line of vision V V. The vanishing point for side J M is located by extending from S a line parallel to J M, so that it in-

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tersects the picture plane P P at X, and then dropping down to L on the line of vision V V. Likewise the vanishing point for side M N is located by extending from S a line parallel to MN, so that it intersects PP at Y, and then dropping down to R on the line of vision, as shown.

The principal points in the plan A are now extended toward the station point S by dotted lines, and where these lines intersect the picture plane they are dropped down to develop the perspective drawing. These lines alone determine the width and length of the house and its parts in D.

The height of the house is determined by actual measurements laid off on the line of measure, which is the corner M nearest the observer. These measurements are taken directly from the elevations.

As a base to start from we have the line of vision V V, which, as we remember, is about 5 feet 6 inches above the ground. We therefore locate the ground line of corner M on line M S, 5 feet 6 inches below the line of vision V V, and let the height and other lines come where they will, according to the vertical scale measurements. The height of the porch, windows, roof, chimney, etc., are all laid off on line M S, and from the points thus located the lines are extended to right and to left, as required. Those extending to the left meet at L on the line of vision, and those extending to the right meet at R, also on the line of vision. —The Wood-worker.

Engineers Wanted for Navy

The Navy Mobilization Office, 742 Market street, San Francisco, has received telegraphic instructions from the Navy Department, Washington, D. C., to continue its effort to secure deck and engineer officer material for induction into Naval service. Engineer officer material will be assigned to the U. S. Navy Steam Engineering School at Stevens Institute of Technology, Hoboken, N. J.

With the signing of the armistice the emergency which made necessary the original call for engineers and deck officers did not cease to exist, but, on the contrary, was greatly increased. The country is now faced with the colossal task of returning its "Victory Boys" as speedily as possible consistent with safety and personal comfort. This is the task which the Navy is now called upon to accomplish, and it can best be done with the cooperation of every man qualified for a commission in these branches of Naval service.

The U. S. Navy Steam Engineering School is open to men between the ages of 20 and 40 who meet the physical requirements of the Navy for line officers, who are of thorough ability and officer-like character, and who have completed an engineering course (mechanical, electrical, civil, mining or chemical), at certain recognized technical schools or who possess an education and experience along steam engineering lines adjudged equivalent thereof.

Application may be made to the Navy Mobilization Station, 742 Market street, San Francisco, for induction for assignment to this school.

Two Kinds of Draftsmen

There are two kinds of draftsmen. The first is he who makes drawings merely as a DRAWING. This is the ideal draftsman, whose work shows finish and correctness of delineation, but is often devoid of real thought or intensive application of true architectural ideals. This kind is the true draftsman type. To him architecture is simply drawing.

The second is the draftsman who pays less attention to the drawing, but very much heed to the thing that is to be BUILT. To him a drawing is merely a tool, a means of representing to others the thing as it will be. This is the true type of the architectural mind, and often is the only distinguishing mark between an architect and a draftsman! —Building Review.

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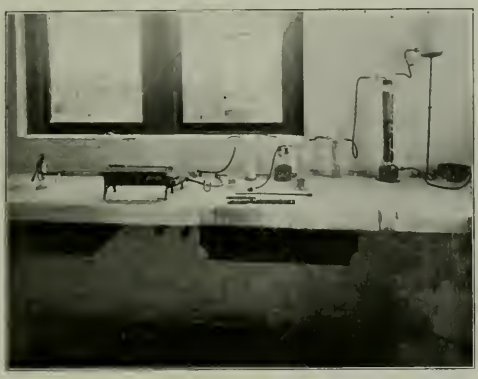

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By counting the explosions of a gasoline engine and doing a little simple figuring, it is possible to determine the efficiency of a gasoline engine of the hit and miss type of governing with surprising accuracy.

Subtract the number of explosions per minute made by the engine when it is pulling no load at all, from the number of explosions per minute when pulling full load. Then divide the remainder by the number of explosions per minute when pulling full load, and the quotient is the so-called "mechanical efficiency."

For a gasoline engine that explodes 95 times per minute when pulling full load, and 24 times per minute when pulling no load at all, the difference is 71. In other words, 71 of the explosions are utilized when pulling full load, whereas 24 of them are lost in overcoming the internal friction in the engine.

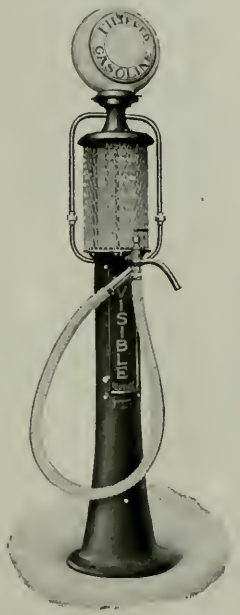
Going back to the rule, divide 71 by 95 and the quotient tells that the mechanical efficiency of the engine is a bit less than 75 per cent—a rather low efficiency. It should be bettered, and it can be bettered by reducing to the minimum the number of explosions per minute when running unloaded.

It is difficult to attain a mechanical efficiency of 90 per cent in a gasoline engine, which is common in steam engines, for steam engines are easier to lubricate and the heat problems encountered are not so complex.

Reduction of explosions simultaneously increases the power of the engine, without consuming an ounce more of gasoline. If the number could be cut down from 24 to 10, we would have 14 "useful" explosions to add to the 71, which gives 85. Or, dividing 14 by 71, we find that the power of the engine has been increased 19.7 per cent. It is doubtful if such an increase could be added to any engine, unless the engine were in a very sad state before the improvement began.—N. G. Near in Concrete.

Personal

Mr. Walter C. Falch, architect of San Francisco, received a very complimentary letter from Mr. W. M. Black, Major General, Chief of Engineers, for his patriotic action in tendering his services to the United States. Mr. Falch passed all his examinations for a commission in the Engineers Corps, closed his office in the city and was preparing to leave when the armistice was signed. Mr. Falch has re-opened his office in the Hearst building, San Francisco, and announces that he has plans completed for several buildings which were abandoned on account of the war.



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Without exception, hospital authorities have come to realize that the efficiency of their staffs is greatly enhanced by the installation of complete signal systems; one, whereby a patient can quickly summon the nurse without disturbing other patients, and a separate system for locating the various doctors throughout the building. This practice has become so general that it is unnecessary to advance any argument in its favor, but the question is rather what is the best type of system that will give a maximum of efficiency and safety, a minimum of trouble, and require the least attention.

This, without question, is one of the most important matters to be considered by all parties interested, inasmuch as the life of a patient may depend on the proper operation of the call system. It must be as simple as possible in construction and operation and absolutely dependable. With these salient points in mind, the Holtzer-Cabot Locking Button, the essential feature of the nurses' call system, was designed, and during the past few years has been installed in over two hundred hospitals.

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Consolidation

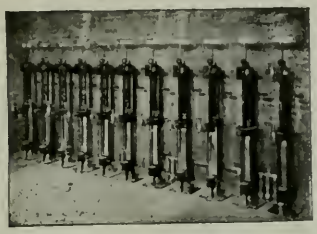
Barley & Reichel, of 106 Bosworth street, manufacturers of boiler feed regulators, thermostats, reducing valves, steam driven oil pumping systems, "Leader" pump governors, oil burners and automatic boiler room equipment, have consolidated with the W. S. Ray Manufacturing Company of Bosworth and Milton streets, San Francisco. The new combination will insure increased facilities without change in prices. Orders for any of the above equipment will receive the personal attention of Messrs. Barley & Reichel, as heretofore.

New Factory for Napa

The Doak Tractor Company, Mr. Bert G. Doak, president, has announced that it contemplates building a new factory in East Napa. Mr. D. P. Doak, of Napa county, and who has offices at 310 Sansome street, San Francisco, is interested in the project.

Designing Private Hospital

Mr. Arthur G. Scholtz, Phelan building, San Francisco, is completing plans for a private sanitarium to be built for a group of San Francisco physicians and which will cost in the neighborhood of $20,000.



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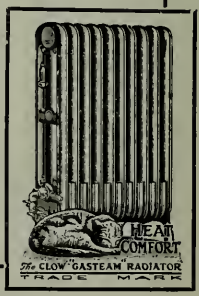

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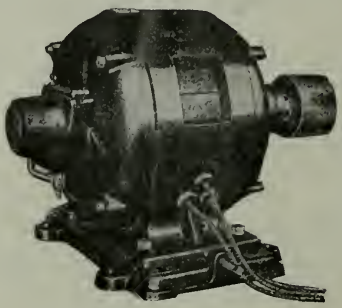

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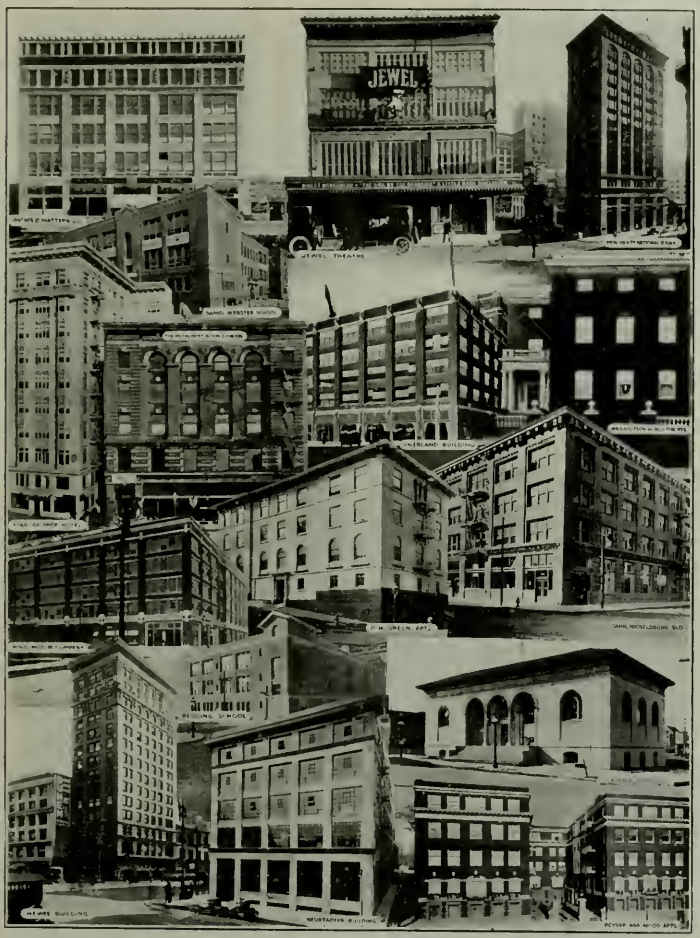

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